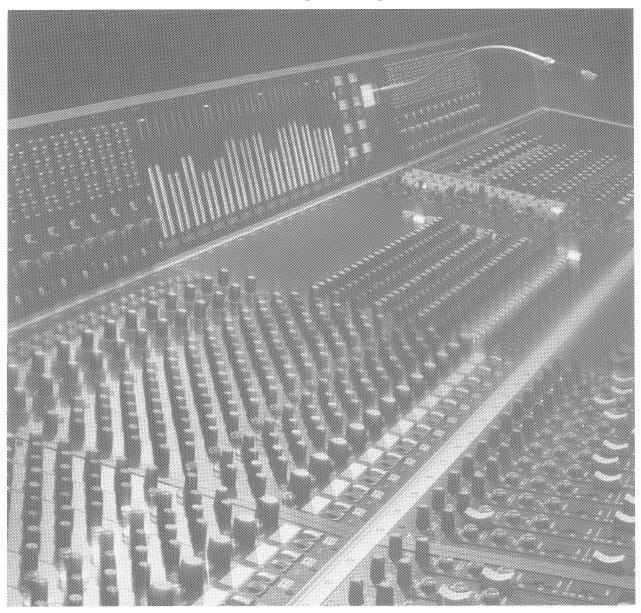
STUDER 900

Betriebs- und Serviceanleitung Operating and Service Instructions



Prepared and edited by: STUDER Professional Audio AG Technical Documentation Althardstrasse 30 CH-8105 Regensdorf-Switzerland

We reserve the right to make alterations.

Copyright by STUDER Professional Audio AG printed in Switzerland Order No. 10.27.0163 (Ed. 1093)

STUDER is a registered trade mark of STUDER Professional Audio AG, Regensdorf

1	Allgemeines Konzeption und Bezeichnungen Abmessungen Elektrische Daten
2	Blockschaltbild Audio gesamt Signalisation
3	Einmessen Messgrundlagen Abgleich der Kanaleinschübe Abgleich der Anzeigeinstrumente
4	Einschub-Module 1.911 Funktion Schemata Bestückungspläne Positionslisten
5	Einschub-Module 1.912 Funktion Schemata Bestückungspläne Positionslisten
6	Einschub-Module 1.913 Funktion Schemata Bestückungspläne Positionslisten
7	Modular Sub-Cards 1.914 Funktion Schemata Bestückungspläne Positionslisten
8	Europakarten und Stromversorgung 1.915 / 1.916 Schemata Bestückungspläne Positionslisten
9	Anschlussfeld Anschlussbelegungen Patch Panel
10	Verdrahtungslisten

1		General Information
'		Layout and Designations
		Dimensions
		Electrical Specification
		Plack Plagrama
2		Block Diagrams
		Audio Block Diagram
		Signalization
3		Alignment Instruction
		Measuring Principles
		Alignment Instructions for Plug-in Units
	/	Alignment Instructions for Level Meters
4	A	Plug-in Units 1.911
		Function
		Circuit Diagrams
		Diagrams for Component Placement
		Parts List
		rans List
5		Plug-in Units 1.912
		Function
		Circuit Diagrams
		Diagrams for Component Placement
		Parts List
LJ	L	
6		Plua-in Units 1.913
6		Plug-in Units 1.913
6		Function
6		Function Circuit Diagrams
6		Function Circuit Diagrams Diagrams for Component Placement
6		Function Circuit Diagrams
		Function Circuit Diagrams Diagrams for Component Placement Parts List
7		Function Circuit Diagrams Diagrams for Component Placement Parts List Modular Sub-Cards 1.914
		Function Circuit Diagrams Diagrams for Component Placement Parts List Modular Sub-Cards 1.914 Function
		Function Circuit Diagrams Diagrams for Component Placement Parts List Modular Sub-Cards 1.914 Function Circuit Diagrams
		Function Circuit Diagrams Diagrams for Component Placement Parts List Modular Sub-Cards 1.914 Function Circuit Diagrams Diagrams for Component Placement
		Function Circuit Diagrams Diagrams for Component Placement Parts List Modular Sub-Cards 1.914 Function Circuit Diagrams
7		Function Circuit Diagrams Diagrams for Component Placement Parts List Modular Sub-Cards 1.914 Function Circuit Diagrams Diagrams for Component Placement Parts List
		Function Circuit Diagrams Diagrams for Component Placement Parts List Modular Sub-Cards 1.914 Function Circuit Diagrams Diagrams for Component Placement Parts List EU standard PCB + Power Supply
7		Function Circuit Diagrams Diagrams for Component Placement Parts List Modular Sub-Cards 1.914 Function Circuit Diagrams Diagrams for Component Placement Parts List EU standard PCB + Power Supply 1.915/1.916
7		Function Circuit Diagrams Diagrams for Component Placement Parts List Modular Sub-Cards 1.914 Function Circuit Diagrams Diagrams for Component Placement Parts List EU standard PCB + Power Supply 1.915/1.916 Circuit Diagram
7		Function Circuit Diagrams Diagrams for Component Placement Parts List Modular Sub-Cards 1.914 Function Circuit Diagrams Diagrams for Component Placement Parts List EU standard PCB + Power Supply 1.915/1.916 Circuit Diagram Diagrams for Component Placement
7		Function Circuit Diagrams Diagrams for Component Placement Parts List Modular Sub-Cards 1.914 Function Circuit Diagrams Diagrams for Component Placement Parts List EU standard PCB + Power Supply 1.915/1.916 Circuit Diagram
8		Function Circuit Diagrams Diagrams for Component Placement Parts List Modular Sub-Cards 1.914 Function Circuit Diagrams Diagrams for Component Placement Parts List EU standard PCB + Power Supply 1.915/1.916 Circuit Diagram Diagrams for Component Placement Parts List
7		Function Circuit Diagrams Diagrams for Component Placement Parts List Modular Sub-Cards 1.914 Function Circuit Diagrams Diagrams for Component Placement Parts List EU standard PCB + Power Supply 1.915/1.916 Circuit Diagram Diagrams for Component Placement Parts List Connectors
8		Function Circuit Diagrams Diagrams for Component Placement Parts List Modular Sub-Cards 1.914 Function Circuit Diagrams Diagrams for Component Placement Parts List EU standard PCB + Power Supply 1.915/1.916 Circuit Diagram Diagrams for Component Placement Parts List Connectors Pin Location
8		Function Circuit Diagrams Diagrams for Component Placement Parts List Modular Sub-Cards 1.914 Function Circuit Diagrams Diagrams for Component Placement Parts List EU standard PCB + Power Supply 1.915/1.916 Circuit Diagram Diagrams for Component Placement Parts List Connectors
8		Function Circuit Diagrams Diagrams for Component Placement Parts List Modular Sub-Cards 1.914 Function Circuit Diagrams Diagrams for Component Placement Parts List EU standard PCB + Power Supply 1.915/1.916 Circuit Diagram Diagrams for Component Placement Parts List Connectors Pin Location
8		Function Circuit Diagrams Diagrams for Component Placement Parts List Modular Sub-Cards 1.914 Function Circuit Diagrams Diagrams for Component Placement Parts List EU standard PCB + Power Supply 1.915/1.916 Circuit Diagram Diagrams for Component Placement Parts List Connectors Pin Location Patch Panel
8		Function Circuit Diagrams Diagrams for Component Placement Parts List Modular Sub-Cards 1.914 Function Circuit Diagrams Diagrams for Component Placement Parts List EU standard PCB + Power Supply 1.915/1.916 Circuit Diagram Diagrams for Component Placement Parts List Connectors Pin Location
8		Function Circuit Diagrams Diagrams for Component Placement Parts List Modular Sub-Cards 1.914 Function Circuit Diagrams Diagrams for Component Placement Parts List EU standard PCB + Power Supply 1.915/1.916 Circuit Diagram Diagrams for Component Placement Parts List Connectors Pin Location Patch Panel

CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

ATTENTION

RISQUE DE CHOC ELECTRIQUE NE PAS OUVRIR

ACHTUNG

GEFAHR: ELEKTRISCHER SCHLAG NICHT ÖFFNEN To reduce the risk of electric shock, do not remove covers (or back). No user-serviceable parts inside. Refer servicing to qualified service personnel.

Afin de prévenir un choc électrique, ne pas enlever les couvercles (où l'arrière) de l'appareil. Il ne se trouve à l'intérieur aucune pièce pouvant être réparée par l'usager.

Um die Gefahr eines elektrischen Schlages zu vermeiden, entfernen Sie keine Abdeckungen (oder Rückwand). Überlassen Sie die Wartung und Reparatur dem qualifizierten Fachpersonal.



This symbol is intended to alert the user to presence of uninsulated "dangerous voltage" within the apparatus that may be of sufficient magnitude to constitute a risk of electric shock to a person.

Ce symbole indique à l'utilisateur qu'il existent à l'intérieur de l'appareil des "tensions dangereuses". Ces tensions élevées entrainent un risque de choc électrique en cas de contact.

Dieses Symbol deutet dem Anwender an, dass im Geräteinnern die Gefahr der Berührung von "gefährlicher Spannung" besteht. Die Grösse der Spannung kann zu einem elektrischen Schlag führen.



This symbol is intended to alert the user to the presence of **important instructions** for operating and maintenance in the enclosed documentation.

Ce symbole indique à l'utilisateur que la documentation jointe contient d'importantes instructions concernant le fonctionnement et la maintenance.

Dieses Symbol deutet dem Anwender an, dass die beigelegte Dokumentation **wichtige Hinweise** für Betrieb und Wartung beinhaltet.

CAUTION:

Lithium Battery. Danger of explosion by incorrect handling. Replace by battery of the same make and type only.

ATTENTION:

Pile au lithium. Danger d'explosion en cas de manipulation incorrecte. Ne remplacer que par un modèle de même type.

ACHTUNG:

Explosionsgefahr bei unsachgemässem Auswechseln der Lithiumbatterie. Nur durch den selben Typ ersetzen.

ADVARSEL:

Lithiumbatterei. Eksplosinsfare. Udskinftning ma kun foretages af en sagkyndig of som beskrevet i servicemanualen (DK).

FIRST AID

(in case of electric shock)

- 1. Separate the person as quickly as possible from the electric power source:
- · by switching off the equipment
- or by unplugging or disconnecting the mains cable
- pushing the person away from the power source by using dry insulating material (such as wood or plastic).
- After having sustained an electric shock, always consult a doctor.

WARNING!

DO NOT TOUCH THE PERSON OR HIS CLOTHING BEFORE THE POWER IS TURNED OFF, OTHERWISE YOU STAND THE RISK OF SUSTAINING AN ELECTRIC SHOCK AS WELL!

- 2. If the person is unconscious
- · check the pulse,
- reanimate the person if respiration is poor,
- lay the body down and turn it to one side, call for a doctor immediately.

PREMIERS SECOURS

(en cas d'électrocution)

- Si la personne est dans l'impossibilité de se libérer:
- Couper l'interrupteur principal
- · Couper le courant
- Repousser la personne de l'appareil à l'aide d'un objet en matière non conductrice (matière plastique ou bois)
- Après une électrocution, consulter un médecin.

ATTENTION!

NE JAMAIS TOUCHER UNE PERSONNE QUI EST SOUS TENSION, SOUS PEINE DE SUBIR EGALEMENT UNE ELECTROCUTION.

- En cas de perte de connaissance de la personne électrocutée:
- · Controller le pouls
- Si nécessaire, pratiquer la respiration artificielle
- Placer l'accidenté sur le flanc et consulter un médecin.

ERSTE HILFE

(bei Stromunfällen)

- Bei einem Stromunfall die betroffene Person so rasch wie möglich vom Strom trennen:
- Durch Ausschalten des Gerätes
- Ziehen oder Unterbrechen der Netzzuleitung
- Betroffene Person mit isoliertem Material (Holz, Kunststoff) von der Gefahrenquelle wegstossen
- Nach einem Stromunfall sollte immer ein Arzt aufgesucht werden.

ACHTUNG!

EINE UNTER SPANNUNG STE-HENDE PERSON DARF NICHT BERÜHRT WERDEN. SIE KÖN-NEN DABEI SELBST ELEKTRI-SIERT WERDEN!

- 2. Bei Bewusstlosigkeit des Verunfallten:
- · Puls kontrollieren,
- bei ausgesetzter Atmung künstlich beatmen,
- Seitenlagerung des Verunfallten vornehmen und Arzt verständigen.

Installation, Betrieb und Entsorgung

Vor der Installation des Gerätes müssen die hier aufgeführten und auch die weiter in dieser Anleitung mit △ bezeichneten Hinweise gelesen und während der Installation und des Betriebes beachtet werden.

Das Gerät und sein Zubehör ist auf allfällige Transportschäden zu untersuchen.

Ein Gerät, das mechanische Beschädigung aufweist oder in welches Flüssigkeit oder Gegenstände eingedrungen sind, darf nicht ans Netz angeschlossen oder muss sofort durch Ziehen des Netzsteckers vom Netz getrennt werden. Das Öffnen und Instandsetzen des Gerätes darf nur vom Fachpersonal unter Einhaltung der geltenden Vorschriften durchgeführt werden.

Falls dem Gerät kein konfektioniertes Netzkabel beiliegt, muss dieses durch eine Fachperson unter Verwendung der mitgelieferten Kabel-Gerätesteckdose IEC320/C13 oder IEC320/C19 und unter Berücksichtigung der einschlägigen, im geweiligen Lande geltenden Bestimmungen angefertigt werden; siehe Bild unten.

Vor Anschluss des Netzkabels an die Netzsteckdose muss überprüft werden, ob die Stromversorgungs- und Anschlusswerte des Gerätes (Netzspannung, Netzfrequenz) innerhalb der erlaubten Toleranzen liegen. Die im Gerät eingesetzten Sicherungen müssen den am Gerät angebrachten Angaben entsprechen.

Ein Gerät mit einem dreipoligen Gerätestecker (Gerät der Schutzklasse I) muss an eine dreipolige Netzsteckdose angeschlossen und somit das Gerätegehäuse mit dem Schutzleiter der Netzinstallation verbunden werden (Für Dänemark gelten Starkstrombestimmungen, Abschnitt 107).

Installation, Operation, and Waste Disposal

Before you install the equipment, please read and adhere to the following recommendations and all sections of these instructions marked with \triangle .

Check the equipment for any transport damage.

A unit that is mechanically damaged or which has been penetrated by liquids or foreign objects must not be connected to the AC power outlet or must be immediately disconnected by unplugging the power cable. Repairs must only be performed by trained personnel in accordance with the applicable regulations.

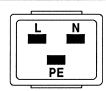
Should the equipment be delivered without a matching mains cable, the latter has to be prepared by a trained person using the attached female plug (IEC320/C13 or IEC320/C19) with respect to the applicable regulations in your country - see diagram below.

Before connecting the equipment to the AC power outlet, check that the local line voltage matches the equipment rating (voltage, frequency) within the admissible tolerance. The equipment fuses must be rated in accordance with the specifications on the equipment.

Equipment supplied with a 3-pole appliance inlet (equipment conforming to protection class I) must be connected to a 3-pole AC power outlet so that the equipment cabinet is connected to the protective earth conductor of the AC supply (for Denmark the Heavy Current Regulations, Section 107, are applicable).



IEC 320 / C13



IEC 320 / C19

Female plug (IEC320), view from contact side:

L live; brown National American Standard: black N neutral; blue white

PE ... protective earth; green and yellow green

Connecteur femelle (IEC320), vue de la face aux contacts:

L.....phase, brun Standard National Américain: noir N.....neutre, bleu blanc PE....terre protective; vert et jaune vert

Ansicht auf Steckkontakte der Kabel-Gerätesteckdose (IEC320):

L.....Polleiter, braun USA-Standard: schwarz N.....Neutralleiter, hellblau weiss

PE....Schutzleiter, gelb/grün grün

Bei der Installation des Gerätes muss vermieden werden, dass:

- das Gerät Regen, Feuchtigkeit, direkter Sonneneinstrahlung oder übermässiger Wärmestrahlung von Wärmequellen (Heizgeräte, Heizungen, Spotlampen) ausgesetzt wird
- die für den Betrieb des Gerätes benötigte Luftzirkulation beeinträchtigt und dadurch die zulässige maximale Lufttemperatur der Geräteumgebung überschritten wird (Wärmestau)
- die Belüftungsöffnungen des Gerätes blockiert oder abgedeckt werden.

Das Gerät und seine Verpackung darf nur sachgerecht entsorgt werden. Alle Teile des Gerätes, die gefährliche Stoffe (Quecksilber, Cadmium) enthalten, müssen als Sondermüll behandelt werden.

Verbrauchte Batterien und Akkus müssen dem Hersteller zur Entsorgung zurückgegeben oder entsprechend den spezifischen Bestimmungen Ihres Landes fachgerecht entsorgt werden.

Wartung und Reparatur

Durch Entfernen von Gehäuseteilen, Abschirmungen etc. werden stromführende Teile freigelegt. Aus diesem Grund müssen u.a. die folgenden Grundsätze beachtet werden:

Eingriffe in das Gerät dürfen nur von Fachpersonal unter Einhaltung der geltenden Vorschriften vorgenommen werden.

Vor Entfernen von Gehäuseteilen muss das Gerät ausgeschaltet und vom Netz getrennt werden.

Bei geöffnetem, vom Netz getrenntem Gerät dürfen Teile mit gefährlichen Ladungen (z. B. Kondensatoren, Bildröhren) erst nach kontrollierter Entladung, heiße Bauteile (Leistungshalbleiter, Kühlkörper etc.) erst nach deren Abkühlen berührt werden.

Bei Wartungsarbeiten am geöffneten, unter Netzspannung stehenden Gerät dürfen blanke Schaltungsteile und metallene Halbleitergehäuse weder direkt noch mit einem nichtisolierten Werkzeug berührt werden.

Zusätzliche Gefahren bestehen bei unsachgemässer Handhabung besonderer Komponenten:

- Explosionsgefahr bei Lithiumzellen, Elektrolyt-Kondensatoren und Leistungshalbleitern
- Implosionsgefahr bei evakuierten Anzeigeeinheiten
- Strahlungsgefahr bei Lasereinheiten (nichtionisierend), Bildröhren (ionisierend)
- Verätzungsgefahr bei Anzeigeeinheiten (LCD) und Komponenten mit flüssigem Elektrolyt.

Solche Komponenten dürfen nur von dafür ausgebildetem Fachpersonal unter Verwendung von vorgeschriebenen Schutzmitteln (u.a. Schutzbrille, Handschuhe) gehandhabt werden.

The equipment installation **must satisfy** the following requirements:

- Protection against rain, humidity, direct solar irradiation or strong thermal radiation from heat sources (heaters, radiators, spotlights).
- Unobstructed air circulation so that the maximum air temperature in the equipment environment will not be exceeded (no heat accumulation).
- Ventilation louvers of the equipment must not be blocked or covered.

The equipment and its packing materials should ultimately be disposed off in accordance with the applicable regulations only. All parts of the equipment that contain hazardous substances (mercury, cadmium) must be treated as toxic waste.

Weak batteries or exhausted rechargeable batteries must be returned to the manufacturer for competent disposal or must be disposed of in accordance with the environmental protection regulations applicable for your country.

Maintenance and Repair

The removal of housing parts, shields, etc. exposes energized parts. For this reason the following precautions should be observed:

Maintenance should only be performed by trained personnel in accordance with the applicable regulations. The equipment should be switched off and disconnected from the AC power outlet before any housing parts are removed.

Even after the equipment has been disconnected from the power, parts with hazardous charges (e.g. capacitors, picture tubes) should only be touched after they have been properly discharged. Hot components (power semiconductors, heat sinks, etc.) should only be touched after they have cooled off.

If maintenance is performed on a unit that is opened and switched on, no uninsulated circuit components and metallic semiconductor housings should be touched neither with your bare hands nor with uninsulated tools.

Certain components pose additional hazards:

- Explosion hazard from lithium batteries, electrolytic capacitors and power semiconductors
- Implosion hazard from evacuated display units
- Radiation hazard from laser units (non-ionizing), picture tubes (ionizing)
- Caustic effect of display units (LCD) and such components containing liquid electrolyte.

Such components should only be handled by trained personnel who are properly protected (e.g. by goggles, gloves).



Für Wartung und Reparatur der sicherheitsrelevanten Teile des Gerätes darf nur Ersatzmaterial nach Herstellerspezifikation verwendet werden.

Das Gerät muss ordnungsgemäss und regelmässig gewartet und somit in sicherem Zustand erhalten werden. Bei ungenügender Wartung oder bei Änderungen der sicherheitsrelevanten Teile des Gerätes erlischt die entsprechende Produktehaftung des Herstellers.

For maintenance work and repair on components that influence the equipment safety, only replacement material conforming to the manufacturer's specifications may be used.

The equipment should be properly serviced in regular intervals and be maintained in safe operating condition. If the equipment is not properly maintained or if any modifications are made to components that influence safety, the manufacturer's product liability gets void.

Elektrostatische Entladung (ESD) bei Wartung und Reparatur

Electrostatic Discharge (ESD) during Maintenance and Repair

ATTENTION:

Observe precautions for handling devices sensitive

to electrostatic discharge!



ATTENTION:

Respecter les précautions d'usage concernant la manipulation de composants sensibles à l'électri-

cité statique!

ACHTUNG:

Vorsichtsmassnahmen bei Handhabung elektrostatisch entladungsgefährdeter Bauelemente be-

achten!

Viele ICs und andere Halbleiter sind empfindlich gegen elektrostatische Entladung (ESD). Unfachgerechte Behandlung von Baugruppen mit solchen Komponenten bei Wartung und Reparatur kann deren Lebensdauer drastisch vermindern.

Bei der Handhabung der ESD-empfindlichen Komponenten sind u.a. folgende Regeln zu beachten:

ESD-empfindliche Komponenten dürfen ausschliesslich in dafür bestimmten und bezeichneten Verpakkungen gelagert und transportiert werden.

- Unverpackte, ESD-empfindliche Komponenten dürfen nur in den dafür eingerichteten Schutzzonen (EPA, z.B. Gebiet für Feldservice, Reparatur- oder Serviceplatz) gehandhabt und nur von Personen berührt werden, die durch ein Handgelenkband mit Serienwiderstand mit dem Massepotential des Reparatur- oder Serviceplatzes verbunden sind. Das gewartete oder reparierte Gerät wie auch Werkzeuge. Hilfsmittel, EPA-taugliche (elektrisch halbleitende) Arbeits-, Ablage- und Bodenmatten müssen ebenfalls mit diesem Potential verbunden sein.
- Die Anschlüsse der ESD-empfindlichen Komponenten dürfen unkontrolliert weder mit elektrostatisch aufladbaren (Gefahr von Spannungsdurchschlag), noch mit metallischen Oberflächen (Schockentladungsgefahr) in Berührung kommen.
- Um undefinierte transiente Beanspruchung der Komponenten und deren eventuelle Beschädigung durch unerlaubte Spannung oder Ausgleichsströme zu vermeiden, dürfen elektrische Verbindungen nur am abgeschalteten Gerät und nach dem Abbau allfälliger Kondensatorladungen hergestellt oder getrennt werden.

Many ICs and semiconductors are sensitive to electrostatic discharge (ESD). The life of components containing such elements can be drastically reduced by improper handling during maintenance and repair work.

Please observe the following rules when handling ESD sensitive components:

- ESD sensitive components should only be stored and transported in the packing material specifically provided for this purpose.
- Unpacked ESD sensitive components should only be handled in ESD protected areas (EPA, e.g. area for field service, repair or service bench) and only be touched by persons who wear a wristlet that is connected to the ground potential of the repair or service bench by a series resistor. The equipment to be repaired or serviced and all tools, aids, as well as electrically semiconducting work, storage and floor mats should also be connected to this ground potential.
- The terminals of ESD sensitive components must not come in uncontrolled contact with electrostatically chargeable (voltage puncture) or metallic surfaces (discharge shock hazard).
- · To prevent undefined transient stress of the components and possible damage due to inadmissible voltages or compensation currents, electrical connections should only be established or separated when the equipment is switched off and after any capacitor charges have decayed.

SMD-Bauelemente

Der Austausch von SMD-Bauelementen ist ausschliesslich geübten Fachleuten vorbehalten. Für verwüstete Platinen können keine Ersatzansprüche geltend gemacht werden. Beispiele für korrekte und falsche SMD-Lötverbindungen in der Abbildung weiter unten.

Bei Studer werden keine handelsüblichen SMD-Teile bewirtschaftet. Für Reparaturen sind die notwendigen Bauteile lokal zu beschaffen. Die Spezifikationen aller Komponenten finden Sie in den Positionslisten im Schemateil.

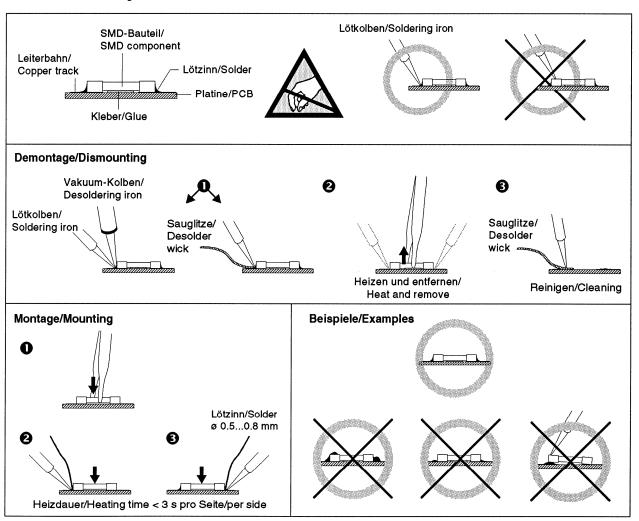
Spezialkomponenten sind in der Positionsliste mit einer Artikelnummer versehen und können bei Studer unter dieser Nummer bezogen werden.

SMD Components

SMDs should only be replaced by skilled specialists. No warranty claims will be accepted for circuit boards that have been ruined. Proper and improper SMD soldering joints are depicted below.

Studer does not keep any commercially available SMDs in stock. For repairs the corresponding devices should be purchased locally. The specifications of all components can be found in the parts lists in the diagram section.

Special components having a part number in the parts list can be ordered from Studer by specifying this number.



Störstrahlung und Störfestigkeit

Das Gerät entspricht den Schutzanforderungen auf dem Gebiet der elektromagnetischen Phänomene, die u.a. in den Richtlinien 89/336/EWG und FCC, Part 15, aufgeführt sind:

- Die vom Gerät erzeugten elektromagnetischen Aussendungen sind soweit begrenzt, dass ein bestimmungsgemässer Betrieb anderer Geräte und Systeme möglich ist.
- Das Gerät weist eine angemessene Festigkeit gegen elektromagnetische Störungen auf, so dass sein bestimmungsgemässer Betrieb möglich ist.

Das Gerät wurde getestet und erfüllt die Bedingungen der im Kapitel "Technische Daten" aufgeführten EMV-Standards. Die Limiten dieser Standards gewährleisten mit einer angemessenen Wahrscheinlichkeit sowohl einen Schutz der Umgebung wie auch entsprechende Störfestigkeit des Gerätes. Eine absolute Garantie, dass keine unerlaubte elektromagnetische Beeinträchtigung während des Gerätebetriebes entsteht, ist jedoch nicht gegeben.

Um die Wahrscheinlichkeit solcher Beeinträchtigung weitgehend auszuschliessen, sind u.a. folgende Massnahmen zu beachten:

- Installieren Sie das Gerät gemäss den Angaben in der Bedienungsanleitung, und verwenden Sie das mitgelieferte Zubehör.
- Verwenden Sie im System und in der Umgebung, in denen das Gerät eingesetzt ist, nur Komponenten (Anlagen, Geräte), die ihrerseits die Anforderungen der obenerwähnten Standards erfüllen.
- Sehen Sie ein Erdungskonzept des Systems vor, das sowohl die Sicherheitsanforderungen (die Erdung der Geräte gemäss Schutzklasse I mit einem Schutzleiter muss gewährleistet sein), wie auch die EMV-Belange berücksichtigt. Bei der Entscheidung zwischen stern- oder flächenförmiger bzw. kombinierter Erdung sind Vor- und Nachteile gegeneinander abzuwägen.
- Benutzen Sie abgeschirmte Kabel für die Verbindungen, für welche eine Abschirmung vorgesehen ist. Achten Sie auf einwandfreie, grossflächige, korrosionsbeständige Verbindung der Abschirmung zum entsprechenden Steckeranschluss bzw. zum Steckergehäuse. Beachten Sie, dass eine nur an einem Ende angeschlossene Kabelabschirmung als Sende- bzw. Empfangsantenne wirken kann (z.B. bei wirksamer Kabellänge von 5 m oberhalb von 10 MHz), und dass die Flanken der digitalen Kommunikationssignale hochfrequente Aussendungen verursachen (z.B. LS- oder HC-Logik bis 30 MHz).
- Vermeiden Sie Bildung von Stromschleifen oder vermindern Sie deren unerwünschte Auswirkung, indem Sie deren Fläche möglichst klein halten und den darin fliessenden Strom durch Einfügen einer Impedanz (z.B. Gleichtaktdrossel) reduzieren.

Electromagnetic Compatibility

The equipment conforms to the protection requirements relevant to electromagnetic phenomena that are listed in the guidelines 89/336/EC and FCC, part 15.

- The electromagnetic interference generated by the equipment is limited in such a way that other equipment and systems can be operated normally.
- The equipment is adequately protected against electromagnetic interference so that it can operate correctly.

The equipment has been tested and conforms to the EMC standards applicable to residential, commercial and light industry, as listed in the section "Technical Data". The limits of these standards reasonably ensure protection of the environment and corresponding noise immunity of the equipment. However, it is not absolutely warranted that the equipment will not be adversely affected by electromagnetic interference during operation.

To minimize the probability of electromagnetic interference as far as possible, the following recommendations should be followed:

- Install the equipment in accordance with the operating instructions. Use the supplied accessories.
- In the system and in the vicinity where the equipment is installed, use only components (systems, equipment) that also fulfill the above EMC standards.
- Use a system grounding concept that satisfies the safety requirements (protection class I equipment must be connected with a protective ground conductor) that also takes into consideration the EMC requirements. When deciding between radial, surface or combined grounding, the advantages and disadvantages should be carefully evaluated in each case.
- Use shielded cables where shielding is specified.
 The connection of the shield to the corresponding connector terminal or housing should have a large surface and be corrosion-proof. Please note that a cable shield connected only single-ended can act as a transmitting or receiving antenna (e.g. with an effective cable length of 5 m, the frequency is above 10 MHz) and that the edges of the digital communication signals cause high-frequency radiation (e.g. LS or HC logic up to 30 MHz).
- Avoid current loops or reduce their adverse effects by keeping the loop surface as small as possible, and reduce the noise current flowing through the loop by inserting an additional impedance (e.g. common-mode rejection choke).



Class A Equipment - FCC Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide a reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Caution:

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment. Also refer to relevant information in this manual.

CE-Konformitätserklärung

Wir.

Studer Professional Audio AG, CH-8105 Regensdorf,

erklären in eigener Verantwortung, dass das in dieser Anleitung beschriebene Produkt

• 900, Mischpult,

auf das sich diese Erklärung bezieht, entsprechend den Bestimmungen der EU-Richtlinien und deren Ergänzungen

- Elektromagnetische Verträglichkeit (EMV): 89/336/EWG + 92/31/EWG + 93/68/EWG
- Niederspannung: 73/23/EWG, 93/68/EWG

mit den folgenden Normen und normativen Dokumenten übereinstimmt:

Sicherheit:
 Class I FN 60065/1

Class I, EN 60065/1993 (IEC 65/1985)

EMV:

EN 50081-1/1992; EN 50082-1/1992

Regen dorf, 16. Juni 1995

₿. Hochstrasser, Geschäftsleiter

. Fiala, Leiter QS

CE Declaration of Conformity

We.

Studer Professional Audio AG, CH-8105 Regensdorf,

declare under our sole responsibility that the product described in this manual

900, Mixing Console,

to which this declaration relates, according to following regulations of EU directives and amendments

- Electromagnetic Compatibility (EMC): 89/336/EEC + 92/31/EEC + 93/68/EEC
- Low Voltage (LVD): 73/23/EEC + 93/68/EEC

is in conformity with the following standards or other normative documents:

Safety:

Class I, EN 60065/1993 (IEC 65/1985)

EMC:

EN 50081-1/1992: EN 50082-1/1992

Regensdorf, June 16, 1995

B. Hochstrasser, Managing Director

ර්. Fiala, Manager QA

KAPITEL 1: Aligemeines

1.	Gesar	mtansicht des Mischpultes
	1.1 1.2	Ansichtszeichnung
2.	Abme	ssungen
	2.1	Chassisversionen5
	2.2	Querschnittzeichnungen7
	2.3	Masse der Einschubplätze9
3.	Konze	eption und Bezeichnungen
	3.1	Bezeichnung der Einschubplätze10
	3.2	Steckeranordnung und Bezeichnungen 10
	3.3	Verbindungsprint Eingangseinheiten13
	3.4	Sammelschienenanschluss 14
	3.5	Signalisation15
	3.6	Masseführung im Blickpunkt21
1.	Elektr	ische Daten
	4.1	Pegel26
	4.2	Pegeldiagramm27
	4.3	Impedanzen28
	4.4	Frequenzgänge28
	4.5	Fremdspannungen29
	4.6	Klirrfaktor und Übersprechen29
	4.7	Stromversorgung29

2. Abmessungen

2.1 Chassisversionen

Das Pultchassis wird in zwei Grundausführungen für 3 oder 4 Einschubsektionen gebaut. Mit Chassiseinheiten in zwei Breiten für 12 bzw. 16 Einschubreihen wird die individuelle Pultgrösse realisiert. Ein Chassis für 12 Einhuiten bietet zudem Platz für verschieden dimensionierte, 19" normierte Geräte.

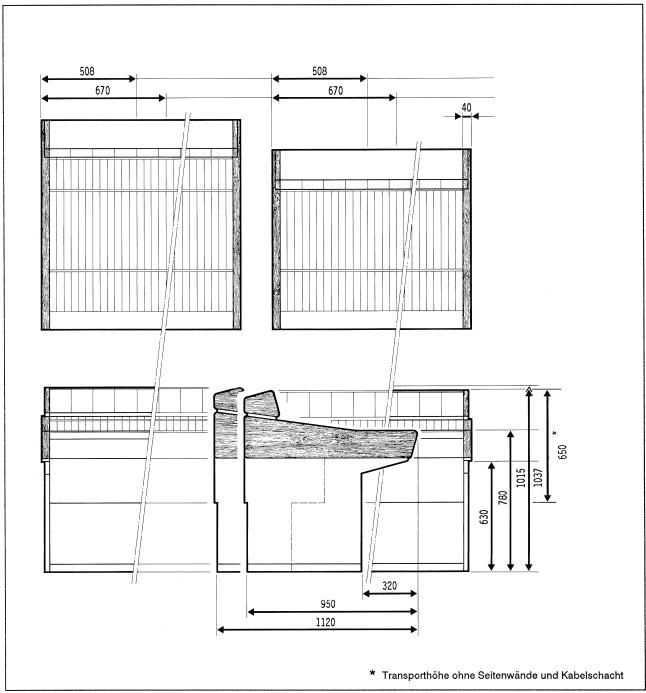
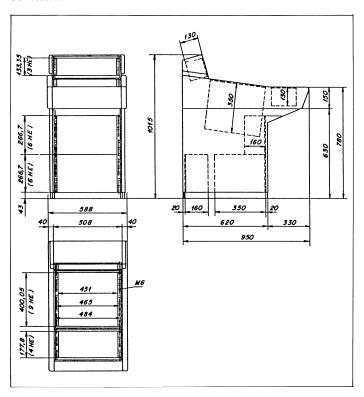


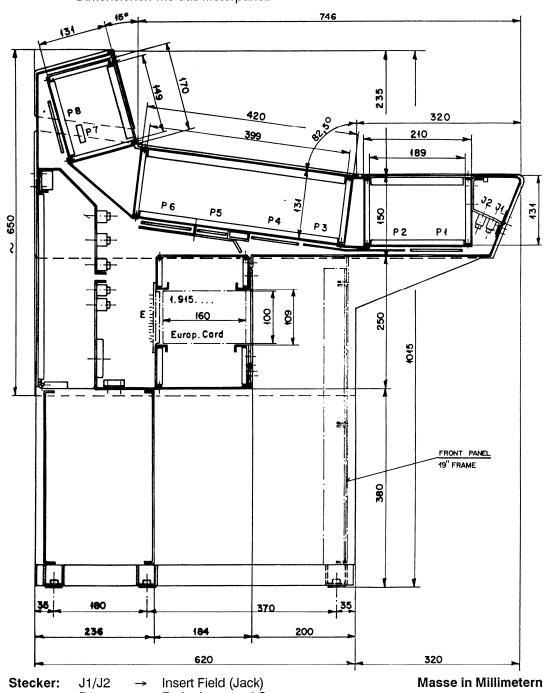
Fig. 1 Masszeichnungen der zwei Chassisbreiten für die beiden Grundversionen mit 3 bzw. 4 Einschubsektionen.

19" Chassis: Dieses Chassis entspricht der Grundeinheit für 12 Einheiten, bietet aber Platz für 19" normierte Geräte.



2.2 Querschnittzeichnung

Der Seitenriss zeigt die Pultversion mit 3 Einschubsektionen. Eine zusätzliche Routingsektion liegt zwischen Eingangs- und Meterpanel und hat die gleichen Dimensionen wie das Meterpanel.



P1 → Fader Input and Output

P2/P3 → Interconnection Fader - Input Unit

 $\begin{array}{ccc} P4(P8) & \rightarrow & Mains \ Bus \\ P5 & \rightarrow & Intercom \\ P6 & \rightarrow & Inputs \end{array}$

P7 → Meter Connection

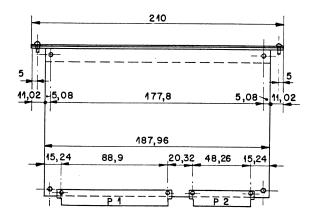
X/D/S → Input/Output Connection Panel

E → Eurocards (Voltage Stabilizer, Line Amplifier etc.)

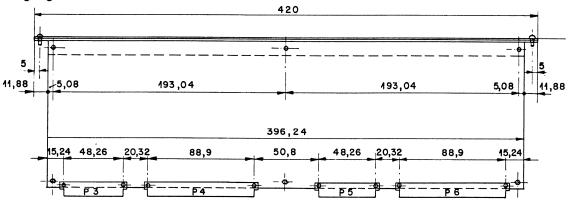
2.3 Masse der Einschubplätze

Wiederum ist die Mischpultversion mit 3 Einschubsektionen dargestellt. Eine 4. Sektion für erweitertes Routing hat die gleichen Dimensionen wie das Meterpanel.

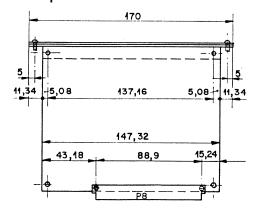
Fadersektion 1.911.*

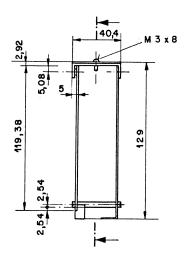


Eingangssektion 1.912.*



Meterpanel 1.913.*





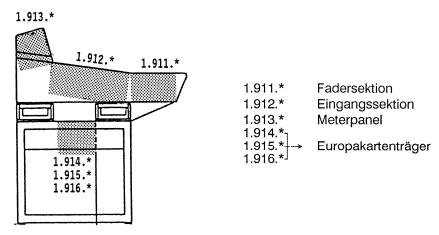
EDITION: 28. Mai 1990

3. Konzeption und Bezeichnungen

Der modulare Aufbau der STUDER Regiepulte 900 ermöglicht eine dem Einzelfall angepasste Konzeption. Nach erfolgter Montage sind die Einschubmodule nur noch sehr eingeschränkt vertauschbar. Anschlussfeld und Verdrahtung werden für jeden Kunden individuell ausgelegt und in den Kapiteln 2, 9 und 10 des Handbuches dokumentiert. Als Orientierungshilfe für Struktur und Funktion des Regiepultes werden im Folgenden einige Grundsätze erläutert.

3.1 Bezeichnung der Einschubplätze

Auf einer Einschubreihe (entspricht einem Kanal) stehen 4 bis 5 Einschubplätze zur Verfügung. Die zugehörigen Baugruppen tragen Nummern mit folgenden Anfangsziffern:



Die Europakarten sind mit den Anfangsziffern 1.915.* und 1.916.* bezeichnet. Die STUDER "Modular Sub Cards" (1.914.*)lassen sich auf einer Trägerkarte im Europakartenformat kombinieren und ebenfalls im Europakartenträger unterbringen.

3.2 Steckeranordnung und Bezeichnungen

Alle Stecker des Mischpultes haben eine Bezeichnung, die die Lage und den Steckertyp definiert. Die Bezeichnung eines Steckerplatzes setzt sich aus vier Ziffern mit folgenden Bedeutungen zusammen:

1. Ziffer: Nummer des Pultchassis 1)

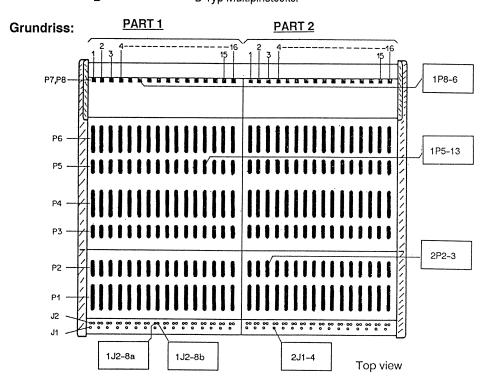
2. Ziffer: Abkürzung für den Steckertyp (vgl. Tabelle)

3. Ziffer: Vertikale Position ²⁾
4. Ziffer: Horizontale Position ¹⁾

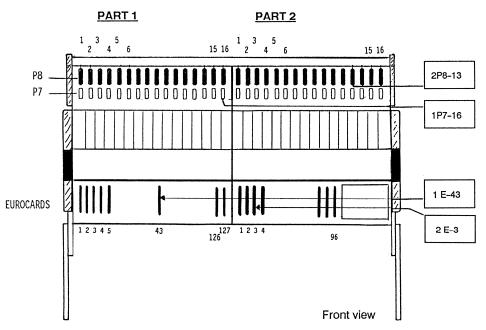
- 1) Numerierung von links nach rechts
- Pultoberseite: Numerierung von vorn nach hinten Pultrückseite: Numerierung von oben nach unten

Abkürzungen für Steckertypen:

P1 / P4 / P6 / P8	32 pin Eurocard-Stecker	DIN 41612
P2 / P3 / P5	16 pin Eurocard-Stecker	DIN 41612
E	32 / 64 pin Eurocard-Stecker	DIN 41612
P7	10 / 16 / 26 pin Stecker	DIN 41651/MIL
J	Stereo Jack, Ø 6,3mm	
X	XLR Stecker	
S	Siemens Multipinstecker	
D	D Typ Multipinstecker	



Aufriss:

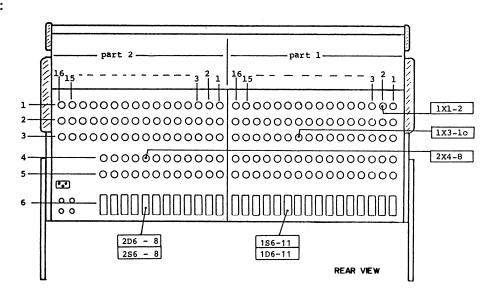


EDITION: 28. Mai 1990

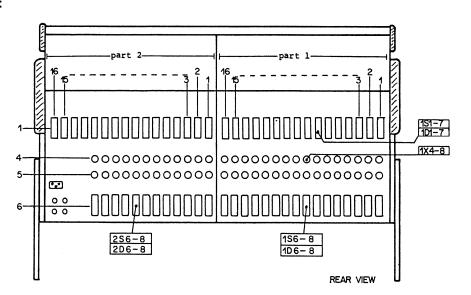
Anschlussfeld: Bezeichnung der Steckerplätze

Die individuelle Auslegung des Anschlussfeldes ist in Kapitel 9 dokumentiert. An dieser Stelle wird lediglich das Prinzip für die Steckerbezeichnung erläutert.

Rückansicht 1:



Rückansicht 2:

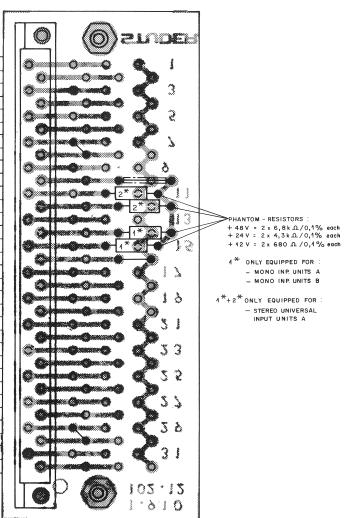


3.3 Verbindungsprint Eingangseinheiten

Die Speisung der verschiedenen Baugruppen sowie der Abgriff der Audiosignale erfolgt über die Eurocard-Stecker an der Basis der Einschubmodule. Die Beschaltung des Input Connection Boards mit dem Stecker P6 ist hier beispielhaft erklärt.

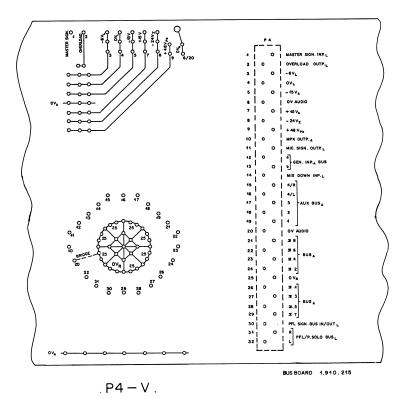
		INPUT	- (CONNECT	ΓΙ(ON BOA	R	DS P6						
MONO INPUT UNITS A		STEREO HL - INPU	JΤ	STEREO UNIVERSA	AL-	MONO INPUT UNITS B		STEREO HL - INPL UNITS B	т					
CONNECTION BOA 1.940.403 (+42 V 1.940.404 (+48 V	PH)	CONNECTION BOA 4.940.425	RD:	CONNECTION BOAR 4.940.123 (+ 12 V I 4.940.124 (+ 48 V I	PH)		PH)	CONNECTION BOAR	D:	NOTES				
	T	LINE 2 INPUT		LINE INPUT	×	TAPE INPUT	0	LINE 2 INPUT CH 2 (RIGHT)	×			a /wht	+	1
TAPE INPUT	×	CH 2 '[RIGHT]	×	CH 2 (RIGHT)	×	(OPTIONAL)	0		^		\dashv	b / blu screen / yel	+	3
	+		H		\vdash		-		\vdash		-	a / wht	+	4
LINE INPUT	×	LINE 2 INPUT	×	LINE INPUT	x	LINE INPUT	x	LINE 2 INPUT X			b / blu	+-	5	
LINE INFO.		CH4 (LEFT)		CH4 (LEFT)				CH 4 (LEFT)				screen / yel	+	6
	0	OUT	x	OUT	×		0	OUT	×			P - FILTER INSERT CH 2 (RIGHT)	-	7
	+		\vdash		\vdash				+					9
	×		0		х		x		0		\exists	PHANTOM POWER	1	10
	\top		\vdash		T		\vdash		T			a /wht	1	11
I		LINE I INPUT	x	MIC INPUT	x		0	LINE 4 INPUT X			b /blu	1	12	
		CH 2 (RIGHT)		CH 2 (RIGHT)				CH 2 (RIGHT)				screen / yel	1	13
	\vdash		\vdash		\vdash		T		\top			a / wht	1	14
MIC INPUT	x	LINE / INPUT	×		х	MIC INPUT	x	LINE 4 INPUT	×			b / blu	1	15
		CH 4 (LEFT)		CH 4 (LEFT)				CH 1 (LEFT)				screen / yel	A	16
	+		\vdash		\vdash								1	17
	\top		T										4	18
	T												1	9
	T												2	0
													2	1
													2	22
	1_												2	23
													2	24
													2	25
									\perp				2	26
			L				L						-	27
			L				L		\perp		_		+	28
OUT	- x	оит	×	OUT	×	оит	×	оит	l x			P-FILTER INSERT CH 1	2	9
IN	Ļ	IN	Ļ	IN	Ļ	IN	Ĺ	IN	Ļ			(LEFT)	+-	30
LINE SIGN.	_ x	LINE / SIGN.	×	LINE SIGN.	х	LINE SIGN.	X	LINE 1 SIGN.	×			FADER START brn	+	34
TAPE SIGN.	1	LINE 2 SIGN.	'		0	TAPE SIGN.(OPT.)	0	LINE 2 SIGN.				SIGNAL red	3	2

X ≙ EQUIPPED



[·] O A NOT EQUIPPED

3.4 Sammelschienenanschluss



... = ANALOG
... = LOGIC
... = REFERENCE
... = INTERNAL
... = PHANTOM

3.5 Signalisation

Das Regiepult ist mit zwei Signalisationssystemen ausgerüstet:

- eine optische Studio-Signalisation
- ein Signalisationssystem zur Fernbedienung von Wiedergabegeräten

Studio Signalisation

Bestehend aus einem Signalisationsfeld mit:

- Anzeige "STUDIO ON" (rotes Licht)
- Anzeige für "READY" (grünes Licht)
- Rückmeldung "ON AIR"
- "CALL" Taste für optische Verbindung zwischen Sprecher und Regie.

Steuerlogik:

Die "READY"- und "STUDIO ON"-Signale können durch getrennte Tastschalter einzeln eingeschaltet werden, wobei das "STUDIO ON"- Signal erst durchgeschaltet wird, wenn bei einer oder mehreren Eingangseinheiten folgende Bedingungen erfüllt sind:

- Input Selector muss auf MIC geschaltet sein.
- MIC CUT Funktion darf nicht aktiv sein.
- MUTE inaktiv.
- Kein MIX DOWN Betrieb.
- INPUT FADER muss aufgezogen sein
- Mindestens ein MASTER (SUMME) muss angewählt sein
- Mindestens ein MASTER FADER muss aufgezogen sein.

Die Relaiskontakte für die Signalisation stehen am D-Typ 15 Pin Stecker "SIGNALING STUDIO" im Anschlussfeld zur Verfügung.

Über die individuelle Ausführung der Studiosignalisation gibt das Blockschalbild "Signalisation" im Kapitel 2 Auskunft. Dort ist auch die Position des Steckers "Signaling Studio" angegeben.

Die Studio Signalisation arbeitet ausschliesslich mit -24 Volt und ist bis ca. 500mA belastbar. (Speisung -24Volt im Pult eingebaut)

"SIGNALING STUDIO"

S-STUDIO ON 0—9 S-STUDIO ON r S-STUDIO ON a S-STUDIO ON a S-STUDIO ON r S-CALL B-CALL 8—0V SIGN.

Signalnamen: (Grossbuchstaben)

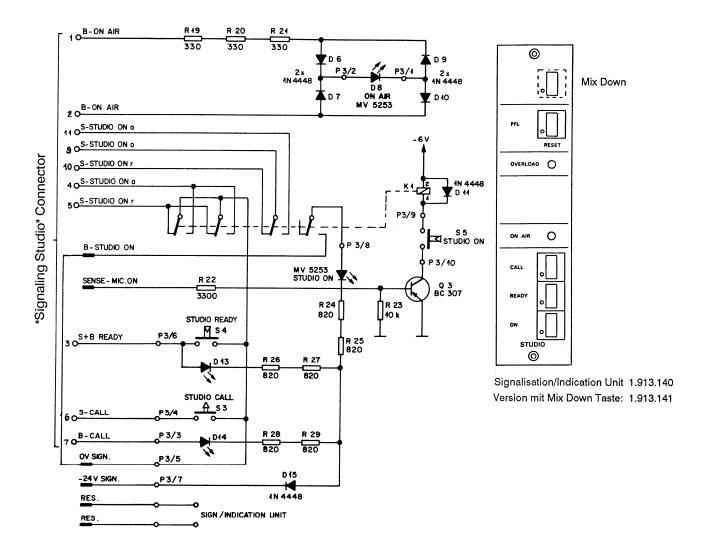
S-Studio - Schalter 'Studio'
B-On Air - Lampe 'On Air'
S-Call - Schalter 'Call'
B-Call - Lampe 'Call'
S+B Ready - Schalter und Lampe 'Ready'

Relaiskontakte: (Kleinbuchstaben)

a – Arbeitskontakt r – Ruhekontakt 0 – Wurzel

D1/15

Schaltschema der Studiosignalisation

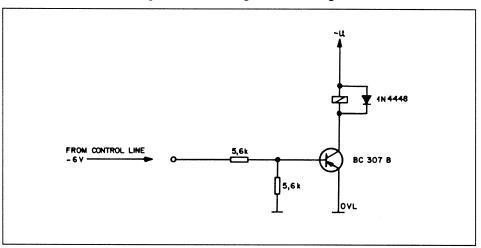


Faderstart Signalisation

An jedem Kanal steht pro Eingang ein separates Fernsteuersignal für Wiedergabegeräte zur Verfügung. Je nach Stellung des Eingangswahlschalters wird einzeln das Zuspielgerät für den LINE- bzw. den TAPE-Eingang angesteuert. Am Steuerausgang des jeweiligen Inputs liegen dann -6V an, die mit maximal 2,5mA belastbar sind.

Da mit dieser Steuerspannung kein Relais direkt angesteuert werden kann, sind in jedem Pult serienmässig alle Steuerleitungen auf die Buchse 'FADER SIGNAL' geführt. In der gleichen Buchse sind auch die Steuerleitungen zu den Faderstartrelais vorhanden. Im zugehörigen Stecker können somit beliebige Faderstartsignale mit Drahtbrücken auf jedes gewünschte Relais (Abspielgerät) geschaltet werden. Der Stecker 'Fader Signal' dient also in der Art eines Jumpers als Programmierstecker.

Wenn in einem speziellen Anwendungsfall direkt die Steuerleitung benutzt werden soll, kann mit folgender Schaltung ein Relais angesteuert werden:



Je nach Pultauslegung steht eine unterschiedliche Anzahl Relais zur Verfügung. Pro Relais-Europakarte 1.915.603 bestehen 9 Schaltmöglichkeiten; 7 Arbeits- und 2 Umschaltkontakte.

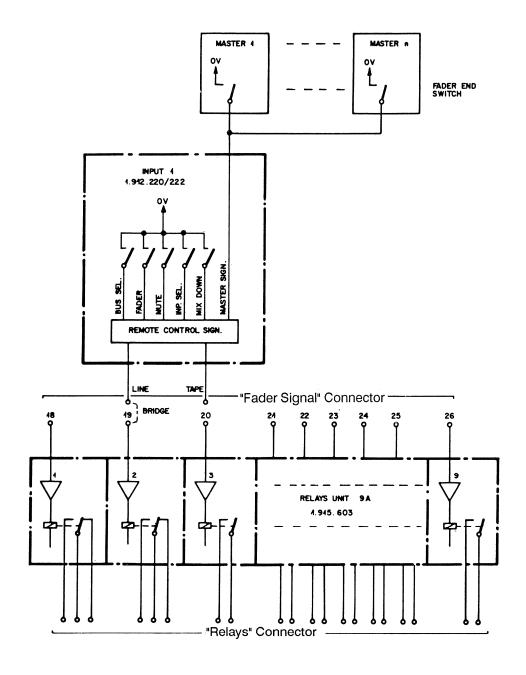
Steuerlogik:

Damit ein Fernsteuersignal durchgeschaltet wird, müssen folgende Bedingungen erfüllt sein:

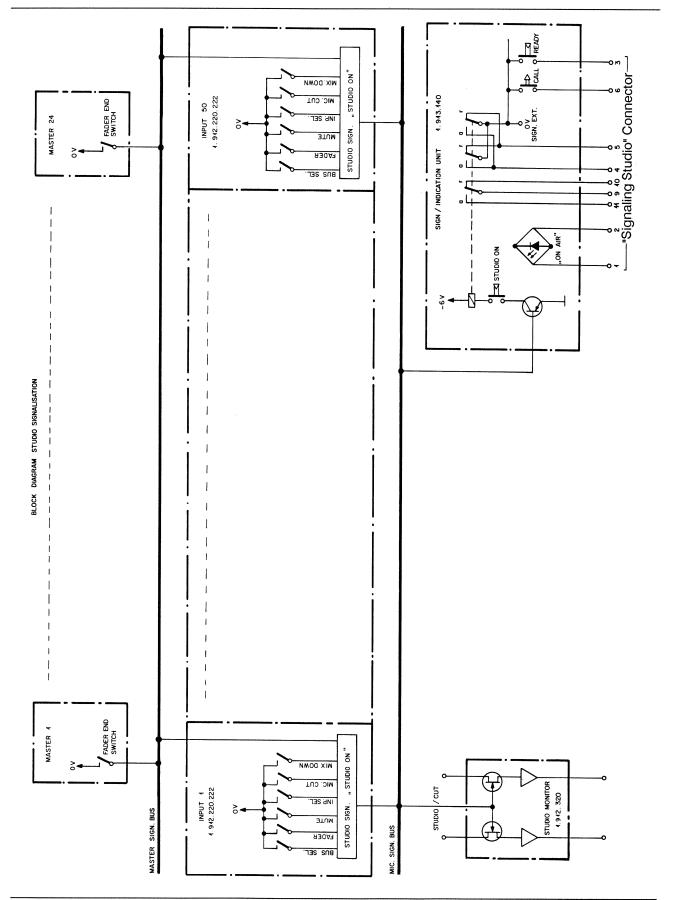
- INPUT SEL auf 'Tape', wenn Tape auf Relais geschaltet
- INPUT SEL auf 'Line', wenn Line auf Relais geschaltet
- falls 'LINE' kein MIX DOWN Betrieb.
- MUTE darf nicht aktiviert sein
- INPUT FADER aufgezogen
- BUS SEL: mindestens 1 MASTER (Summe) muss angewählt sein.
- Mindestens 1 MASTER FADER muss geöffnet sein.

EDITION: 28. Mai 1990

Blockdiagramm Faderstart Fernsteuerung für 1 Eingangskanal

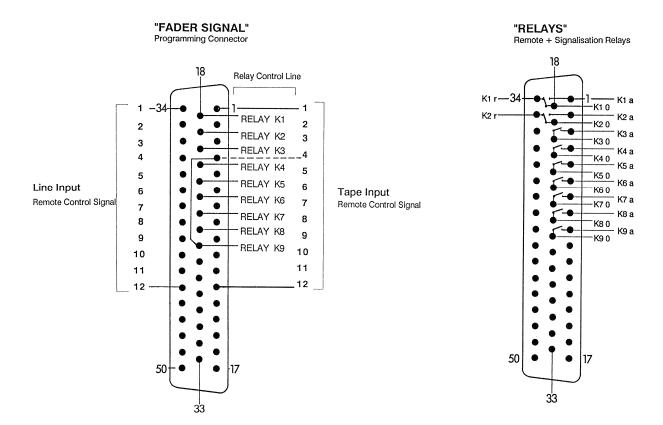


Blockdiagramm Faderstart Fernsteuerung für ganzes System



Beispiel: Mit Input 4 (Tape Input) soll Tape 9 ferngesteuert werden:

Das Faderstartsignal des Tapeeinganges Kanal 4 wird im Stecker 'FADER SIGNAL' auf die Steuerleitung zum Relais K9 verdrahtet. Vorausgesetzt wird natürlich, dass an der Buchse 'RELAYS' eine Fernsteuerverbindung von Relais K9 zum Tape 9 besteht.



Input 4 (Tape) soll Tape 9 fernsteuern: Verbinde im hier abgebildeten Beispiel Pin 4 des Steckers 'Fader Signal' mit Pin 26. Nun kann der Schaltkontakt von Relais K9 an der Buchse 'Relays' zum Fernsteuern der Maschine benützt werden. (K9 0 – K9 a)

3.6 Masseführung im Blickpunkt

Mit der Neuentwicklung der Serie 900 Mischpulte sind für eine ganze Reihe von Problemen grundsätzlich neue Lösungen gefunden worden. Ein sehr wesentlicher Punkt betrifft die Erzielung bester Werte für das Übersprechen und den Fremdspannungabstand. Der folgende Beitrag zeigt sowohl die Problematik als auch die fortschrittlichen Lösungswege auf.

Probleme der Massefühung treten in unterschiedlichem Ausmass in allen Audiogeräten auf. Ihre Lösung bedarf einer sorgfältigen Planung. Alle Beteiligten müssen ihren Beitrag dazu leisten: der Ingenieur in der Entwicklung, der Laborant bei der Auslegung der Leiterplatten, der Konstrukteur bei der Suche nach der besten mechanischen Lösung, oder der Mechaniker bei der Montage der Geräte.

Selbst der Anwender muss einige Grundkenntnisse mitbringen, um ein optimales Resultat erzielen zu können.

Die grossen Probleme der Studio-Erdung inkl. der elektrischen Sicherheit könnten ganze Bücher füllen, stehen aber hier nicht zur Diskussion. Der folgende Bericht beschränkt sich auf die interne Masseführung im Regiepult 900.

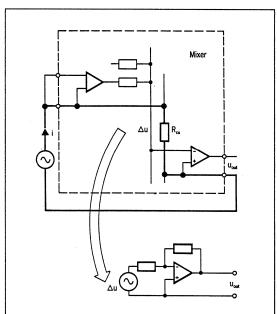
Die äussere Beschaltung

Beispiel:

Ein Signalstrom fliesst durch die Masse vom Eingang zum Ausgang und ist hier als Störung feststellbar.

Grund:

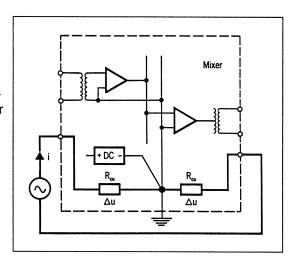
Der Wechselstrom i produziert am Kupferwiderstand R_{Cu} der Masseleitung einen Spannungsabfall, der am Ausgang verstärkt als Störung erscheint. Vor allem bei Amateurgeräten mit unsymmetrischen Trennstellen ist dies ein grosses Problem. Durch den Einsatz von symmetrischen Trennstellen (Trafos oder Elektronik) ist dieses Problem bei Profigeräten weitgehend gelöst.



EDITION: 28. Mai 1990 D1/21

Lösung:

Die Masseleitungen der Eingänge sind an der Rückwand zusammengefasst und führen gemeinsam auf die Masse des Netzteils. Anstelle der Einspeisung in den Rückleiter wird der störende Strom jetzt in den Schirmleiter eingespiesen und kann die Übertragung nicht mehr stören.



Die interne Masseführung

Das Mischpult ist immer die Hauptschaltzentrale im Tonstudiobereich. Unzählige Audiowege lassen sich schalten. Nicht alle Wege werden mit gleichartigen Signalen durchlaufen. Es bestehen somit recht hohe Anforderungen an das Übersprechen.

Beispiel:

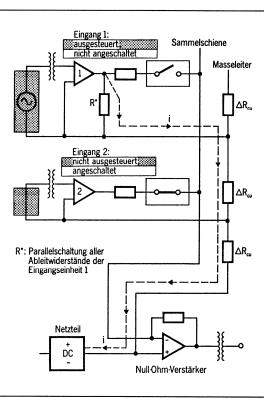
Pflichtenheft der ARD:
Panorama Potentiometer > 70dB
abhängige Wege > 80dB
unabhängige Wege > 85dB
verschiedene Programme > 95dB
Reglerdämpfung > 100dB

Andere Rundfunkanstalten stellen vergleichbare Forderungen.

Durch mechanische Aufteilung der Kanäle lässt sich das kapazitive Übersprechen beheben. Das ohmsche Übersprechen ist jedoch nur mit einer optimalen Masseführung zu verhindern.

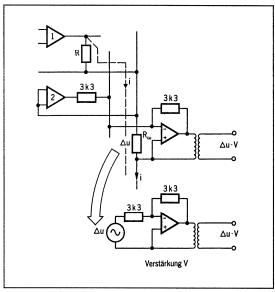
Zur Problemstellung:

Der Eingang 1 ist ausgesteuert. Die Spannung bildet am Widerstand R einen Strom i. Dieser fliesst über die Masse der Sammelschiene zum Netzteil. Die Masseleitung lässt sich darstellen als eine Serieschaltung von Teilwiderständen ΔR_{Cu}.



Einfache Anordnung einer Sammelschiene

Der Strom i bildet an ΔR_{Cu} einen Spannungsabfall Δu. Diese Spannung wirkt im aufgeschalteten Kreis 2 als Generator und produziert ein Übersprechen.



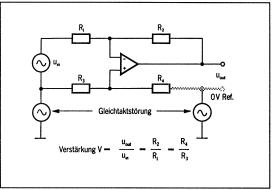
Ohmsches Übersprechen

Mögliche Lösungen:

- Masseschiene mit grossem Querschnitt verwenden
- Einspeisung der Masse in der Mitte der Sammelschiene
- Sternförmige Massenverdrahtung (nicht realisierbar)
- Entkoppelung durch Trafos (nicht mehr zeitgemäss)
- Entkoppelung durch Differentialverstärker

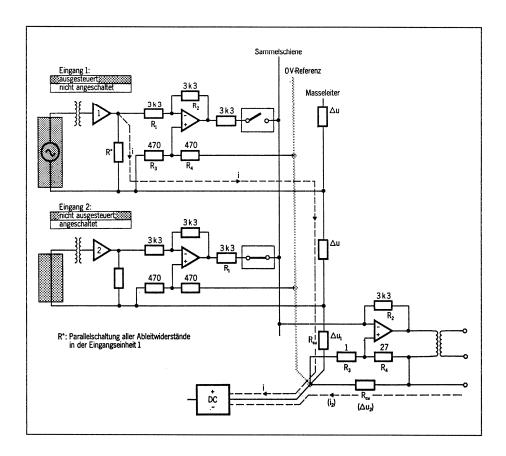
Im Pult 900 wird die letzte Lösung angewendet; diese soll hier noch etwas näher beschrieben werden. Grundlage des Systems bildet der Differentialverstärker.

Die Eingangs- und Ausgangs-Gleichtaktstörungen werden durch die Schaltung auskompensiert. Als Bezugsmasse wird im Pult 900 eine «0V-Referenz»-Leitung eingeführt. Dieser Leiter darf unter keinen Umständen belastet werden.



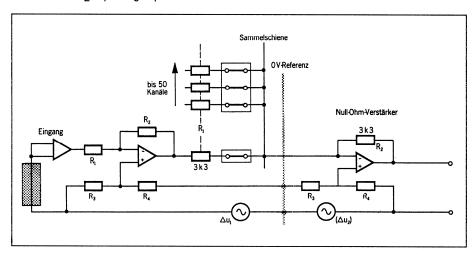
Entkoppelung durch Differentialverstärker

Die Anwendung auf die praktizierte Schaltung zeigt die folgende Abbildung:

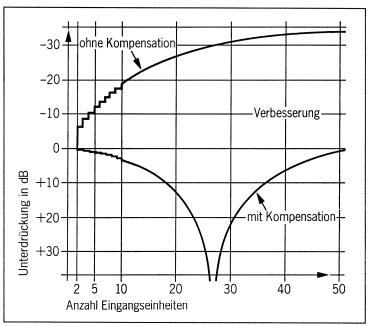


Der Eingang 1 wird wiederum ausgesteuert und produziert am Widerstand R_{Cu}einen Strom i . Dieser fliesst über die Masse der Sammmelschiene zum Netzteil. Der Strom i produziert an ΔR_{Cu} eine kleine Spannung Δu_1 .

Der eingebaute Differentialverstärker kompensiert diese Spannung und Δu_1 fällt dadurch weg. Mit dieser Massnahme ist das ohmsche Übersprechen unterdrückt. Um ein gutes Resultat zu erzielen muss im Differentialverstärker die Bedingung R_2 : $R_1 = R_3$: R_4 möglichst gut erfüllt sein.



Diese Forderung ist in der Eingangseinheit, im Gegensatz zum Null-Ohm-Verstärker, gut erfüllt. Im Null-Ohm-Verstärker variiert der Eingangswiderstand R₁ zwischen 3k3:1 und 3k3:50, je nach der angewählten Kanalzahl. Trotzdem ergibt sich eine eindeutige Verbesserung für die Unterdrückung der Störsignale.



Störsignalunterdrückung in Abhängigkeit von der Kanalzahl.

Differentialverstärker werden im ganzen Mischpult an allen wichtigen Trennstellen eingesetzt. Diese Tatsache sollte beim nachträglichen Einbau von Sonderanfertigungen unbedingt beachtet werden. Durch die konsequente Anwendung dieser fortschrittlichen Technik sind wir in der Lage, auch grösste Regiepulte mit guten Übersprech- und Fremdspannungswerten anzubieten.

EDITION: 28. Mai 1990

4. Elektrische Daten

Allgemein gilt: Spannungen in dBu beziehen sich immer auf 0,775V.

0 dBu ≘ 0,775 V_{eff}

- Die Flachbahnregler der Eingangskanäle und der Summen sind auf 0dB
- Leitungsausgänge sind mit 600Ω abgeschlossen.
- Externe Quellen haben einen Quellenwiderstand von $\leq 200\Omega$.
- Die Angaben gelten im Frequenzbereich von 31,5Hz ... 16kHz.
- Angegebene Pegel sind mit Sinusdauerton gemessen.

4.1 Pegel

Eingänge: MIC -70dBu ...+20dBu

> Empfindlichkeit extern in 10dB Schritten grob, und mit Feinregler

überlappend stufenlos einstellbar.

LINE +6dBu ...+15dBu

Empfindlichkeit intern einstellbar. Der externe Feinregler mit Mittenrasterung ±6dB

erlaubt Anpassung um

TAPE +6dBu ...+15dBu

Empfindlichkeit intern eintellbar.

Einschleifpunkte: INSERT: Der Pegel (Return) liegt bei 0dBu

Ausgänge: Einstellbereich generell +6dBu ... +15dBu (Last:600Ω)

Hauptausgang, Hilfsausgänge, Studioausgang, Monitorausgang sind intern

einstellbar.

Kopfhörer: Monitor und Studio +10dBu unbelastet

Maximale Pegel

Eingänge: MIC: +24dBu

> LINE: +24dBu TAPE: +24dBu INSERT: +20dBu

Ausgänge: Leitung: +24dBu

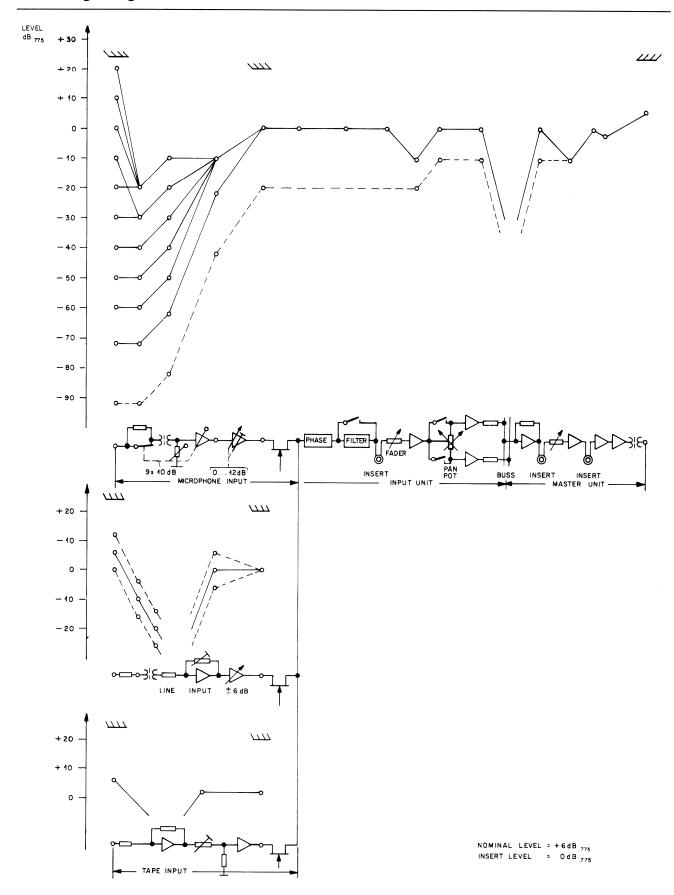
Monitor: +22dBu (30Hz: +18dBu) Studio: +22dBu (30Hz: +18dBu)

Insert: +20dBu

Kopfhörer: +20dBu (Leerlauf)

vor dem Eingangskanalregler $(k_{tot} 1\%)$ Übersteuerungsreserve: 20dB vor dem Summenregler $(k_{tot} 1\%)$ 20dB

4.2 Pegeldiagramm



4.3 Impedanzen

Eingänge:	MIC:		Bereich -7010dB Bereich -10 +20dB	≥ ≥	1,2k Ω 5k Ω	
	LINE + TA	APE:		≥	10k Ω	
	INSERT:			≈	5k Ω	
Ausgänge:	Hauptausg Monitoraus		lusgang, Studioausgang und erell	≤	50 Ω	
	Kopfhörera	iusgang:		≈	135 Ω	
	INSERT:			≤	50 Ω	
Beschreibung:	LINE: TAPE:	symmetris symmetris	ch, erdfrei, Quelle ch, erdfrei, Quelle ch, Quelle trisch, Quelle	<u> </u>	200Ω 200Ω 200Ω 200Ω	
	Leitungsau Studioauso Monitoraus Insertausoa Kopfhörera	gang: sgang: ang:	symmetrisch, erdfrei, Last symmetrisch, erdfrei, Last symmetrisch, erdfrei, Last unsymmetrisch, Last unsymm. empfohlene Last	VI VI VI VI VI	200Ω 600Ω 600Ω 2kΩ 200Ω	

4.4 Frequenzgänge mit Eingangseinheiten Mono "A"

	Filter ausgeschaltet; Toleranz im Bereich von 31,5Hz16kHz	+0,5dB / -1 dB
Filter:	Trittschallfilter 12dB/Oktave 3dB Punkt einstellbar von	30Hz330Hz
	Höhenfilter 12dB/Oktave 3dB Punkt einstellbar von Ausserhalb des Audiobereiches kont	700Hz20kHz inuierlich abfallend mit 12dB/Oktave
Equalizer:	HF Höhenregler "Shelfing" Einsatzfrequenz einstellbar	±15dB 700Hz15kHz
	HF Höhenregler "Bell" Mittenfrequenz einstellbar	±15dB 700Hz15kHz (Güte Q ≈ 1)
	LF Tiefenregler "Shelfing" Einsatzfrequenz einstellbar	±15dB 30Hz600Hz
	LF Tiefenregler "Bell" Mittenfrequenz einstellbar	±15dB 30Hz600Hz (Güte Q ≈ 1)

ALLGEMEINES

HMF Präsenzfilter "Bell" Mittenfrequenz einstellbar ±15dB

400Hz ... 7kHz Güte 'schmal':Q ≈ 3 (bei max. Anhebung)

Güte 'breit': Q ≈ 1 (bei max. Anhebung)

LMF Präsenzfilter "Bell"

±15dB

Mittenfrequenz einstellbar

120Hz ... 2kHz

Güte 'schmal':Q ≈ 3 (bei max. Anhebung)

Güte 'breit': Q ≈ 1 (bei max. Anhebung)

4.5 Fremdspannungen

Die Fremdspannungen sind Effektivwerte mit einer äquivalenten Rauschbandbreite von 30Hz ...23kHz (Siemens U2033 oder gleichwertiges Instrument).

Rauschzahl F des Mikrofoneingangs:

(Quellenimpedanz = 200Ω)

Fremdspannungsabstand am Summenausgang

> 100dB

(Summenregler geschlossen)

Einkanalige Anordnung:

Eingangs- und Summenregler OdB; LINE-Eingang; Verstärkung Ein-/Ausgang =1;

ohne Equalizer

> 98dB

mit Equalizer (linear)

> 90dB

12-kanalige Anordnung:

Eingangs- und Summenregler OdB; LINE-Eingang; Verstärkung Ein-/Ausgang = 1;

ohne Equalizer

> 90dB

mit Equalizer (linear)

> 82dB

24-kanalige Anordnung:

Eingangs- und Summenregler OdB; LINE-Eingang; Verstärkung Ein-/Ausgang = 1;

ohne Equalizer

> 87dB

mit Equalizer (linear)

> 79dB

Klirrfaktor und Übersprechen 4.6

Klirrfaktor:

Für Leitungspegel im Frequenzbereich

≤ 0,1%

Übersprechen:

Übersprechen von Summe auf Summe

> 85dB

Stromversorgung 4.7

Der Netzbetrieb ist für folgende Netzspannungen umschaltbar:

110V, 120V, 140V, 200V, 240V AC ±10%

Interne Betriebsspannungen:

+15VAudio

-15V Audio

-6V Logik

-24V Logik, Steuerung Signalisation 24V

48V Phantomspeisung

D1/29 EDITION: 19. September 1990

SECTION 1: General

1.	Genera	al view of the audio console
	1.1 1.2	General arrangement drawing
2.	Dimens	sions
	2.1 2.2 2.3	Chassis versions
3.	Layout	and designations
	3.1	Designation of the slots10
	3.2	Connector layout and designations 10
	3.3	Connection board, input units
	3.4	Bus connection14
	3.5	Signalization
	3.6	A close-up of the chassis ground system 21
4.	Electric	cal specification
	4.1	Levels
	4.2	Level diagram27
	4.3	Impedances28
	4.4	Frequency response28
	4.5	Noise weighted29
	4.6	Distortion and crosstalk29
	4.7	Power supply29

2. Dimensions

2.1 Chassis versions

The console chassis is available in two basic versions for 3 or 4 module sections. The individual console size is achieved with widths for 12 or 16 module sections. A chassis for 12 modules also accommodates 19" standard units of different sizes.

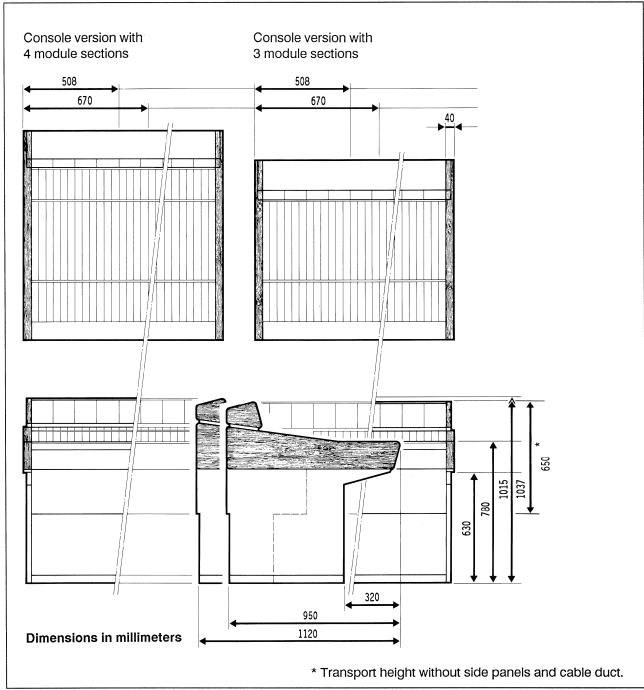
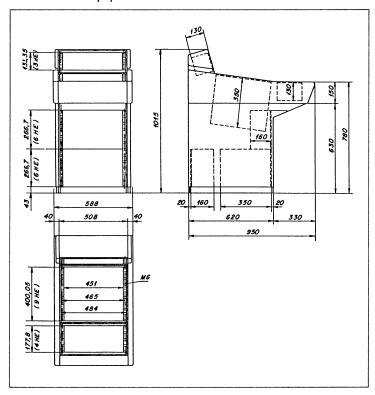


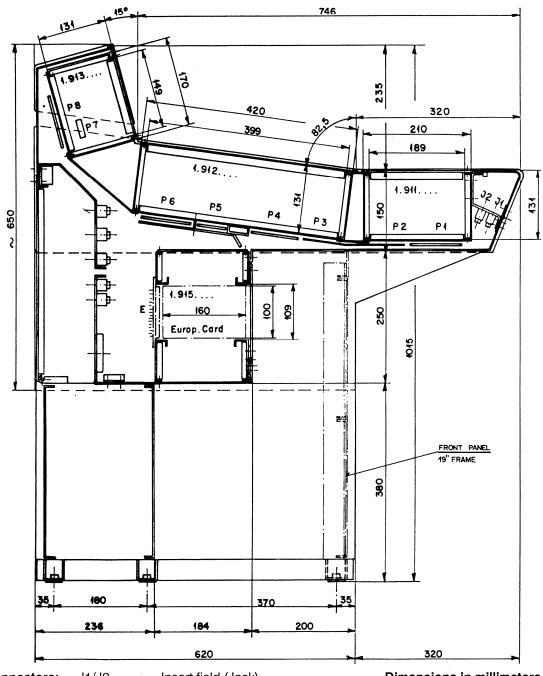
Fig. 1 Dimension drawing of the two chassis widths for the two basic versions with 3 and 4 module sections respectively.

19" Chassis: This chassis corresponds to the basic unit for 12 modules but accommodates 19" standard equipment.



2.2 Section drawing

The sectional view illustrates the console version with 3 module sections. An additional routing section is located between the input panel and the meter panel and has the same dimensions as the meter panel.



Connectors: J1/J2 → Insert field (Jack) Dimensions in millimeters

P1 → Fader Input and Output

P2/P3 → Interconnection fader – Input unit

P4(P8) \rightarrow Mains bus P5 \rightarrow Intercom P6 \rightarrow Inputs

P7 → Meter connection

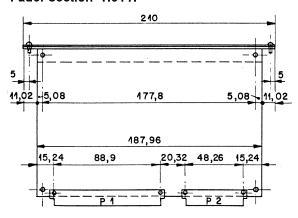
X/D/S → Input/Output connection panel

E → Eurocards (voltage stabilizer, line amplifier etc.)

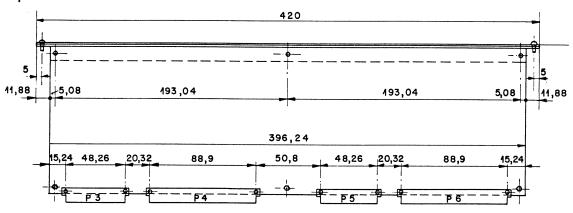
2.3 Dimensions of the plug-in locations

Again the mixing console version with 3 module sections is illustrated. A 4th section for the expanded routing has the same dimensions as the meter panel.

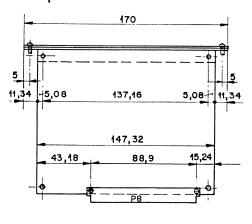
Fader section 1.911.*

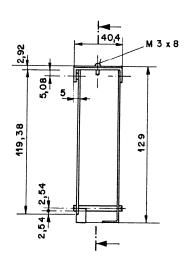


Input section 1.912.*



Meter panel 1.913.*



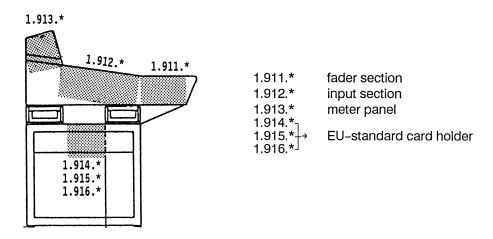


3. Layout and designations

The modular design of the STUDER series 900 mixing consoles permits a layout that is suited to the individual application. After the installation has been completed, the plug-in modules can only be relocated within certain restrictions. The connector panel and the wiring are custom designed for each unit and are documented in Sections 2, 9 and 10 of the manual. As an aid for clarifying the structure and function of the mixing console some basic principles are explained below.

3.1 Designation of the slots

Four to 5 slots are available on a plug-in row (corresponds to one channel). The corresponding modules are numbered with the following starting digits:



The EU circuit boards are identified with the starting digits 1.915.* and 1.916.*. The STUDER modular sub cards (1.914.*) can be combined on an EU-standard mounting board and also be installed in the EU-standard card holder.

3.2 Connector layout and designations

All connectors of the mixing console carry a designation that identifies the location and the connector type. The designation of a connector consists of four digits that have the following meaning:

1st digit: Number of the console chassis 1)

2nd digit: Abbreviation for the connector type (see table)

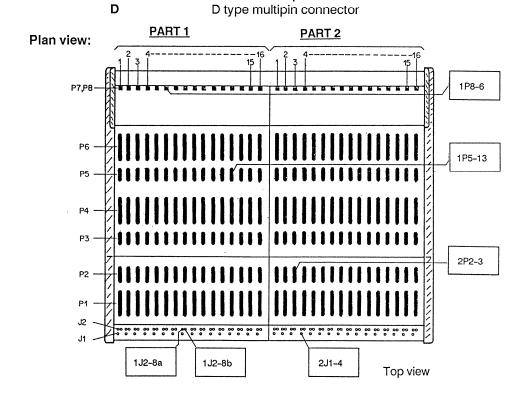
3rd digit: Vertical position ²⁾
4th digit: Horizontal position ¹⁾

1) Numbering from left to right

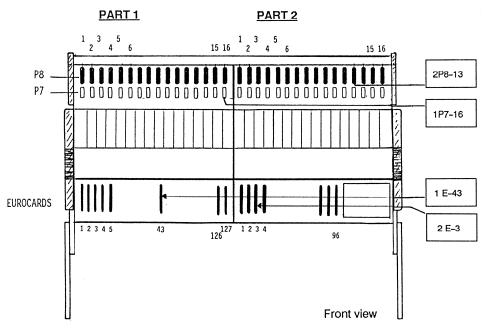
Top of console: Numbering from front to back Rear of console: Numbering from top to bottom

Abbreviations for connector type:

P1 / P4 / P6 / P8	32 pin EU-card connector	DIN 41612
P2 / P3 / P5	16 pin EU-card connector	DIN 41612
E	32 / 64 pin EU-card connector	DIN 41612
P7	10 / 16 / 26 pin connector	DIN 41651/MIL
J	Stereo Jack, Ø 6,3mm	
X	XLR connector	
S	Siemens multipin connector	



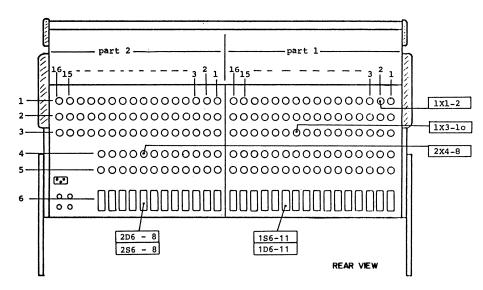
Front view:



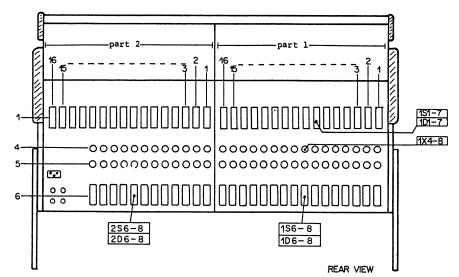
Connector panel: Designation of the connector locations

The individual layout of the connector panel is documented in Section 9. This Section of the manual only explains the principle of the connector designations.

Rear view 1:



Rear view 2:



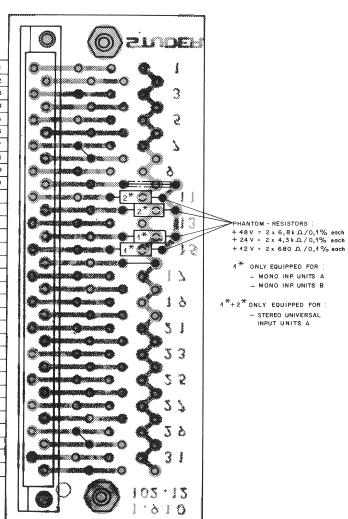
3.3 Connection board, input units

EU-standard connectors at the base of the plug-in modules are used for supplying the various assemblies and for tapping the audio signals. The input connection board with connector P6 is explained here as a typical example.

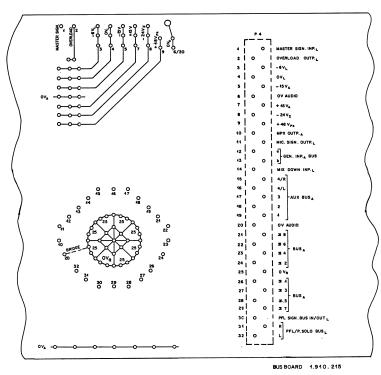
		INPU		CONNEC		ON BOA	ιR	DS P6					
MONO INPUT UNITS A CONNECTION BOARD : 1.940.403 (+42V PH) 1.940.404 (+48V PH)				STEREO UNIVERSAL- INPUT UNITS A CONNECTION BOARD : 4.940.423 (+42 V PH) 4.940.424 (+48 VPH)		4.940.120 (+12V PH)		i i			7		
										NOTES			
	T	LINE 2 INPUT	Π	LINE INPUT		TAPE INPUT		LINE 2 INPUT			a /wht		1
TAPE INPUT	×	CH 2 (RIGHT)	×	CH 2 (RIGHT)	x	(OPTIONAL)	0	CH 2 (RIGHT)	×		b / blu		2
						, , , , , , , , , , , , , , , , , , , ,					screen / yel		3
		LINE 2 INPUT	'	LINE INPUT				LINE 2 INPUT			a / wht		4
LINE INPUT	×	CH 4 (LEFT)	×	CHA (LEFT)	×	LINE INPUT	X	CH 4 (LEFT)	×		b / blu		5
	\downarrow		\perp						\perp		screen / yel		6
		OUT	×	OUT	x		0	OUT	×		P - FILTER INSERT CH 2		7
	\perp	IN	\perp	IN	_		L	IN	\vdash		(RIGHT)		8
	1		1				L		1				9
	X		0		X		Х		0		PHANTOM POWE	R	10
		LINE 4 INPUT		MIC INPUT				LINE 4 INPUT			a /wht		11
	0	CH 2 (RIGHT) X	×	CH 2 (RIGHT)	×		0	CH 2 (RIGHT) X		b /blu		12	
	\perp		_		L				\perp		screen / yel		13
		X		MIC INPUT	х	MIC INPUT	x	LINE 4 INPUT			a / wht		14
MIC INPUT	X		X					CH 1 (LEFT)	X		b / blu		15
						011 (2211)			screen / yel		16		
													17
													18
													19
													20
													21
			_										22
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					L								23
	\perp												24
													25
													26
													27
													28
OUT	×	OUT	×	DUT	x	OUT	×	OUT	×		P - FILTER INSERT CH 1		29
IN	<u> </u> ^	IN	L	⊺N.	Ĺ	IN	Ĺ	IN	Ľ		(LEFT)		30
LINE SIGN.	×	LINE 4 SIGN.	×	LINE SIGN.	х	LINE SIGN.	х	LINE 1 SIGN.	×		FACER START	brn	31
TAPE SIGN.	1^	LINE 2 SIGN.	1^		0	TAPE SIGN. (OPT.)	0	LINE 2 SIGN.]^		SIGNAL	red	32

X & EQUIPPED

O A NOT EQUIPPED



3.4 Bus connection



.P4-V.

... A = ANALOG

...L =LOGIC

...R =REFERENCE

 $\dots_{\rm I}$ =INTERNAL

..._{Ph} = PHANTOM

3.5 Signalization

There are two signaling circuits incorporated in the audio console:

- an optical studio signaling circuit.
- a signaling system for remote control of reproduction equipment.

Studio signalization

The studio signaling system consists of a signaling field with:

- indication for "STUDIO ON" (red light)
- indication for "READY" (green light)
- return command for "ON AIR"
- "CALL" key for optical connection between speaker and control room.

Control logic:

The READY and STUDIO ON signals can be enabled individually by separate nonlocking switches. The STUDIO ON signal is only through-connected if the following criteria are satisfied on at least one input unit:

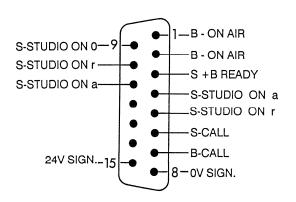
- Input selector must be switched to MIC.
- MIC CUT must be disabled.
- MUTE must be disabled.
- No MIX DOWN operating.
- INPUT FADER must be open.
- At least one MASTER must be selected (Bus selection).
- At least one MASTER FADER must be open.

The relay contacts for the signalization are wired to the D-type 15 pin connector "SIGNALING STUDIO" in the connector panel.

Further information about the individual layout of the signaling system is given in section 2.

The studio signaling system runs at -24V DC. The built in power supply (-24V) may be loaded at 500mA.

"SIGNALING STUDIO"



signal names: (capital letters)

S-Studio 'Studio' switch B-On Air bulb 'On Air' S-Call 'Call' switch B-Call bulb 'Call'

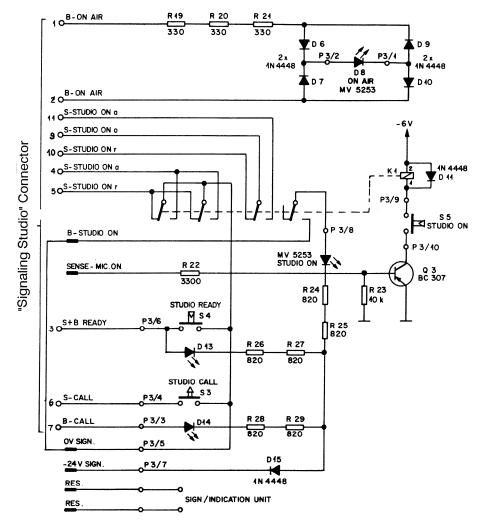
S+B Ready switch and bulb 'Ready'

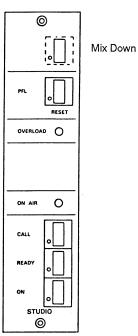
relay contacts: (small letters)

 normally open no normally closed r nc common

E1/15 EDITION: 24. September 1990

Circuit diagram of the studio signalization





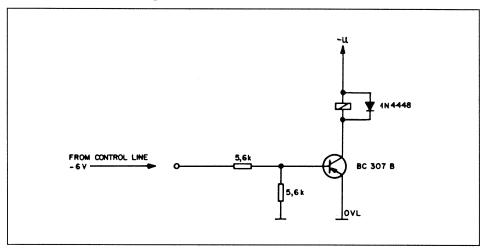
Signalization/indication unit 1.913.140 Version with mix down key: 1.913.141

Fader start signalization

A separate remote control signal for audio reproducers is available on each channel. Depending on the position of the input selector, the insert machine for the LINE or the TAPE input is controlled individually. On the control output, -6~V are available in this case which can be loaded with up to 2.5 mA.

Because it is not possible to directly control a relay with this control voltage, all control lines of every mixing console are factory-connected to the FADER SIGNAL socket. The same socket also contains the control terminals to the fader start relays. This means that any fader start signal can be connected to any relay (audio reproducer) by means of jumpers. The Fader Signal connector consequently serves as a jumper-type programming connector.

If the control line is to be used for special applications, a relay can be controlled by means of the following circuit:



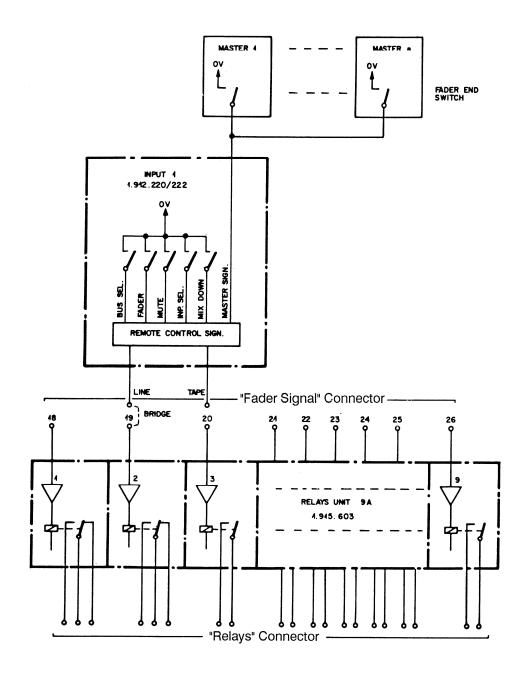
The number of available relays varies, depending on the console configuration. For each EU-standard relay board 1.915.603, there are 9 switching possibilities, i.e. 7 make contacts and 2 two-way contacts are available.

control logic:

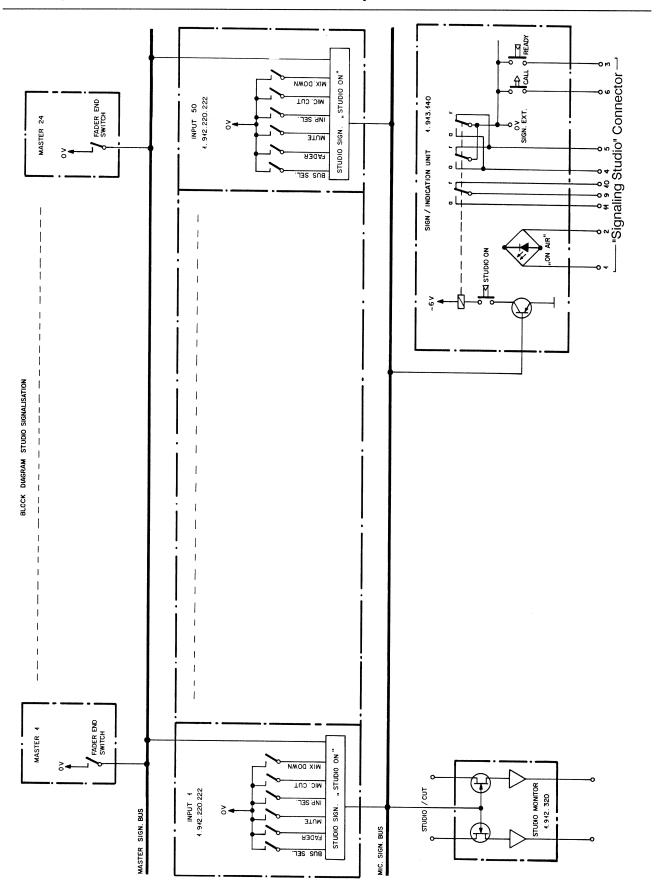
A remote signal is only switched through, if the following conditions are accomplished:

- INPUT SEL on 'Tape', if the Tape input is connected to the relay.
- INPUT SEL on 'Line', if the Line input is connected to the relay.
- If 'LINE' is selected, no MIX DOWN operating.
- MUTE must be disabled.
- INPUT FADER must be open.
- BUS SEL: at least one MASTER must be selected.
- At least one MASTER FADER must be open.

Block diagram for fader-start remote control of 1 input channel

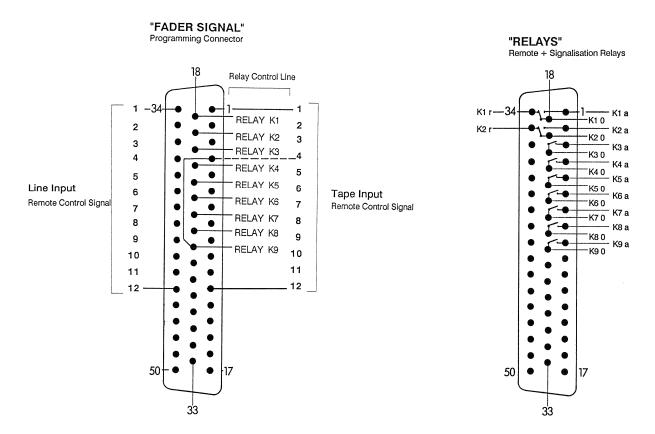


Block diagram for fader-start remote control of the entire system



For instance: Tape 9 should be remotely controlled by input 4 (tape input):

In the programming connector "FADER SIGNAL" the remote control signal of the tape input 4 is connected to the relay control line of relay K9 with a wire bridge. The relay contacts 'K9 0' and 'K9 a' in the "RELAYS" connector may now be used for remote control of the machine.



Connect pin 4 of the "FADER SIGNAL" connector to pin 26.

3.6 A Close-Up of the Chassis Ground System

Totally new solutions to a number of problems had to be found for the newly developed mixing consoles of the series 900. One of our major goals was to achieve outstanding performance in respect to cross talk and signal-to-noise ratio. The following article describes the inherent problems as well as the advanced solutions.

Problems in the layout of the chassis ground occur to some degree in all audio equipment. Careful planning is essential to a satisfactory solution. All persons involved in the design must participate: the development engineer, the laboratory technician who lays out the printed circuit board, the designer in this search for the best possible physical implementation or the technician in the assembly of the equipment.

Even the user should possess some basic knowledge in order to achieve satisfactory results. The enormous problems associated with the studio ground, including the electrical safety, would fill books, and thus cannot be covered here. The following report concentrates on the internal chassis ground concept of the Series 900 mixing consoles.

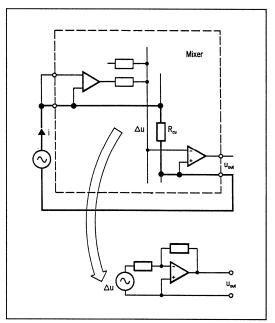
External wiring

Example:

A signal current **i** flows through the chassis from the input to the output where it can be measured as noise.

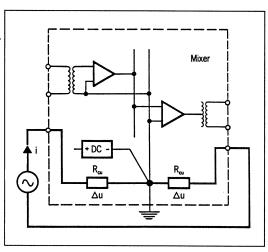
Reason:

On the copper resistor R_{Cu} of the ground conductor, the AC current I causes a voltage drop which appears at the output in the form of amplified noise. This is a serious problem, especially in nonprofessional equipment with unbalanced decoupling components. In professional equipment, this problem has been largely solved by incorporating balanced decoupling components (transformers or electronics).



Solution:

The ground conductors of the inputs are combined on the rear panel from where a common branch leads to the ground of the power supply. Instead of being fed into the return, the parasitic current is fed into the screening and can no longer interfere with the transmission.



Internal ground layout

The mixing console is the main switching center of the recording studio. An uncountable number of audio paths can be established, however, not all paths carry the same types of signals. The cross-talk specification are, therefore, very demanding.

Example:

Target specifications of ARD:

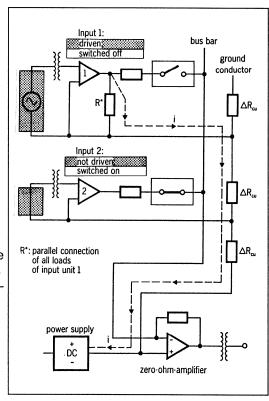
Panorama Potentiometer > 70dB
Dependent paths > 80dB
Independent paths > 85dB
Misc. programs > 95dB
Trimmer attenuation > 100dB

The specifications of other broadcasting companies are similar

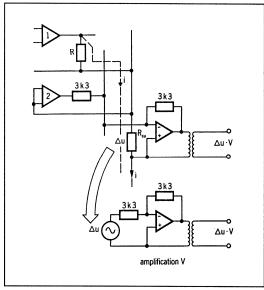
Capacitative cross talk can be overcome through physical isolation of the channels. However, resistive cross talk can only be prevented by an optimum ground system.

Problem illustrating:

To illustrate the problem: simple bus bar arrangement. Input 1 is driven. The voltage forms a current i on resistor R. This current flows through the ground of the bus bar to the power supply. The ground conductor can be represented as a circuit with serially connected partial resistors ΔR_{Cu} .



The current i causes a voltage drop Δu on ΔR_{Cu} . In the selected circuit 2, this voltage acts as a generator and causes cross talk.



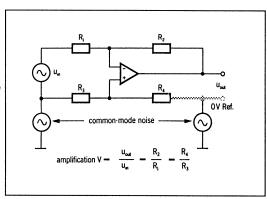
Resistive cross talk

Possible solutions:

- Installation of bus bar with large crossection.
- Feeding the ground in the middle of the bus bar.
- Star-connected chassis ground (not feasible).
- Decoupling with transformers (outdated).
- Decoupling with differential amplifiers.

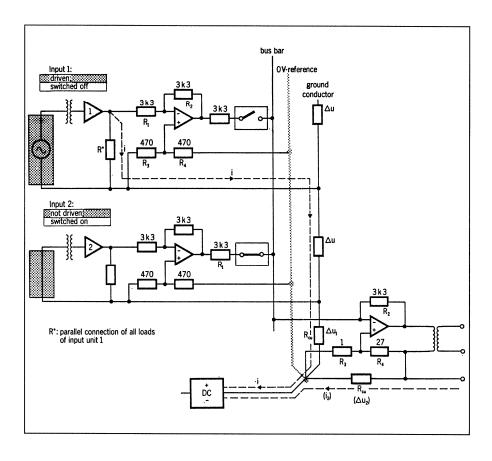
The last solution which is based on the differential amplifier is implemented in the Series 900 mixing consoles and shall now be described in more detail.

The input/output commonmode noise is compensated by this circuit. In the Series 900 audio console, a "0 V reference" line is introduced as a reference ground. Under no circumstances must this conductor be loaded.



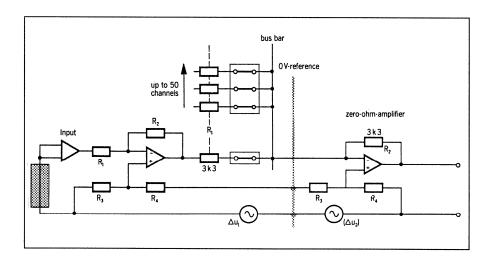
Decoupling with differential amplifiers.

The actual circuitry looks as follows:



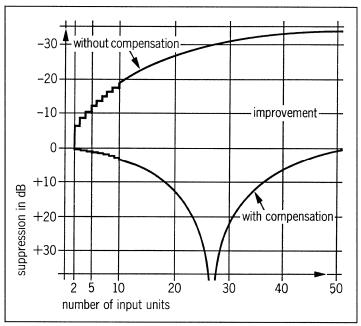
Input 1 is again driven and produces a current flows through the ground of the bus bar to the power supply. Current $\,i\,$ produces a small voltage $\Delta U^{}_1$ on $\Delta R^{}_{Cu}.$

The built-in differential amplifier compensates this voltage. ΔU_1 is thus eliminated and resistive cross talk is cancelled. For an excellent result, the condition $R_2:R_1=R_3:R_4$ must be optimally satisfied.



In contrast to the zero-ohm amplifier, this requirement is well satisfied in the input unit. In the zero-ohm amplifier, the input resistance R_1 varies between 3k3:1...3k3:50, depending on the number of channels selected.

However, a significant improvement in the suppression of noise signals is still achieved.



Suppression of noise signals depending on the number of input units.

Differential amplifiers are used in all major decoupling locations. This fact should, therefore, be taken into consideration in the subsequent installation of custom equipment. Because of the universal application of this advanced technology, event the largest mixing consoles we build still offer excellent crosstalk rejection and SN ratios.

Electrical Specifications 4.

General:

■ Voltages in dBu are referred to 0.775V.

0 dBu ≘ 0,775 V_{eff.}

- Channel and master faders are set to 0 dB. (Position of the linear faders)
- Line outputs are loaded with 600 Ω .
- External sources have a source impedance of $\leq 200 \Omega$.
- Data given are valid from 31.5 Hz...16 kHz.
- Levels are measured with a continuous sine wave. (0 VU

 6 dB below peak recording level)

4.1 Levels

MIC Inputs:

-70dBu ...+20dBu

Sensitivity adjustable in 10dB steps, continuously variable with pot for fine

LINE

-6dBu ...+15dBu

Sensitivity internally presettable. The external pot for fine adjust with center

detent has a range of

±6dB

TAPE

MIC:

+6dBu ...+15dBu

Internally presettable sensitivity.

Insertion points:

INSERT level:

0dBu.

Outputs:

Presettable within a range of

+6dBu ... +15dBu (load 600Ω)

(Main-, auxilliary-, studio-, monitor outputs)

Headphones: monitor and studio +10dBu (unloaded)

Maximum levels

Inputs:

+24dBu

LINE: +24dBu TAPE: +24dBu INSERT: +20dBu

Outputs:

+24dBu

Line: Monitor: +22dBu

(30Hz: +18dBu) Studio: (30Hz: +18dBu) +22dBu

Insert: +20dBu

Headphones: +20dBu (unloaded)

Overload margin:

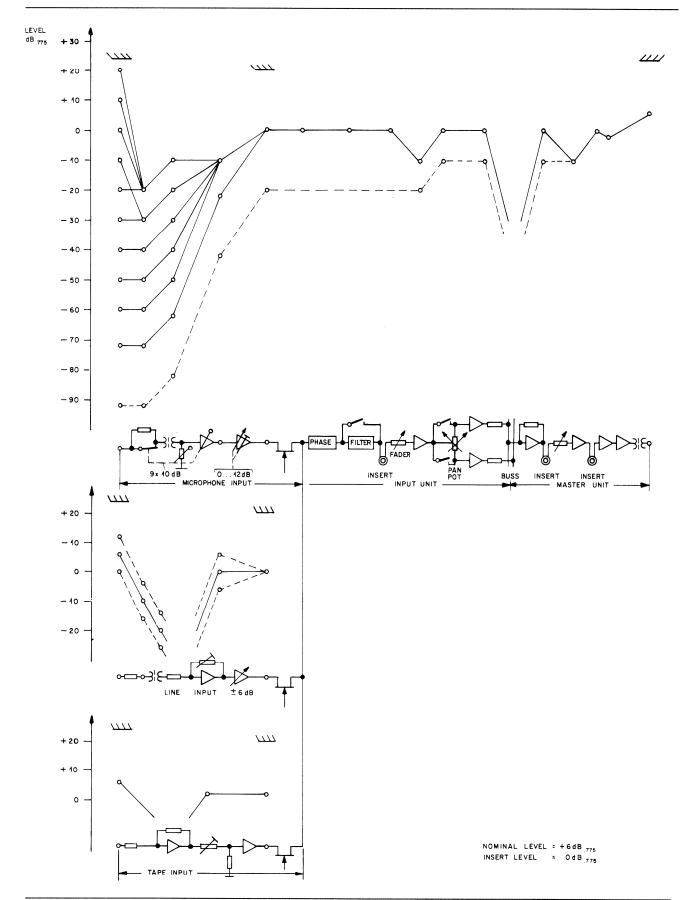
at the channel fader (k_{tot} 1%)

20dB

at the master fader $(k_{tot}^{(1)})$

20dB

4.2 Level Diagram



4.3 Impedances

Inputs:	MIC:	range -7010dB range -10 +20dB	≥ ≥	1,2k Ω 5k Ω	
	LINE + TAPE:		≥	10k Ω	
	INSERT:	≈	5k Ω		
Outputs:	Main-, auxiliary-,	studio-, monitor outputs:	≤	50 Ω	
	Headphones out	put:	≈	135 Ω	
	INSERT:		≤	50 Ω	
Description:	LINE: balan TAPE: balan	ced, floating, source ced, floating, source ced, source anced, source	\ \ \ \	200Ω 200Ω 200Ω 200Ω	
Line outputs: Studio output: Monitor output: Insert output: Headphones:		balanced, floating, load balanced, floating, load balanced, floating, load unbalanced, load unbal., recommended load	N N N	200Ω 600Ω 600Ω 2kΩ 200Ω	

4.4 Frequency Response (Mono Input, Version "A")

	Filters off; frequency range 31,5Hz1	6kHz +0,5dB / -1dB
Filter:	Bass cut 12 dB/octave 3dB point adjustable (roll-off)	30Hz330Hz
	Treble filter 12 dB/octave 3dB point adjustable (roll-off) Outside audio range continuously de	
Equalizer:	Treble control, shelving HF Adjustable attack frequency	±15dB 700Hz15kHz
	Treble control, bell HF ±15dB Adjustable center frequency	700Hz15kHz (Q ≈ 1)
	Bass control, shelving LF Adjustable attack frequency	±15dB 30Hz600Hz
	bass control, bell LF adjustable center frequency	±15dB 30Hz600Hz (Q ≈ 1)

Presence/absence filter, bell HMF ±15dB

Adjustable center frequency 400Hz ... 7kHz

Q 'narrow': $Q \approx 3$ (at max. boost) Q 'wide': $Q \approx 1$ (at max. boost)

Presence/absence filter, bell LMF ±15dB

Adjustable center frequency 120Hz ... 2kHz

Q 'narrow': $Q \approx 3$ (at max. boost) Q 'wide': $Q \approx 1$ (at max. boost)

4.5 Noise weighted

Noise voltages are measured with a true RMS voltmeter and an equivalent noise bandwith of 30 Hz...23kHz (e.g. Siemens U2033 or equal).

Noise figure of the microphone input: $F \le 4dB$

(Source inpedance = 200Ω)

Signal-to-noise ratio > 100dB

(Master fader closed)

One channel:

Input and master faders 0 dB; line input, unity gain;

filters off > 98dB filters on (linear) > 90dB

12-channels:

Input and master faders 0 dB; line input, unity gain;

filters off > 90dB filters on (linear) > 82dB

24-channels:

Input and master faders 0 dB; line input, unity gain;

filters off > 87dB filters on (linear) > 79dB

4.6 Distortion and Crosstalk

Distortion: Line level in frequency range ≤ 0,1%

Crosstalk: Crosstalk from master to master > 85dB

4.7 Power Supply

Mains operation, mains voltage selector for: 110V, 120V, 140V, 200V, 240V AC $\pm 10\%$

Internal supply voltage: +15V Audio

-15V Audio electronics

-6V Logic

-24V Logic/control24V Signalization48V Phantom powering

SECTION 2: Block Diagrams / Blockschaltbilder

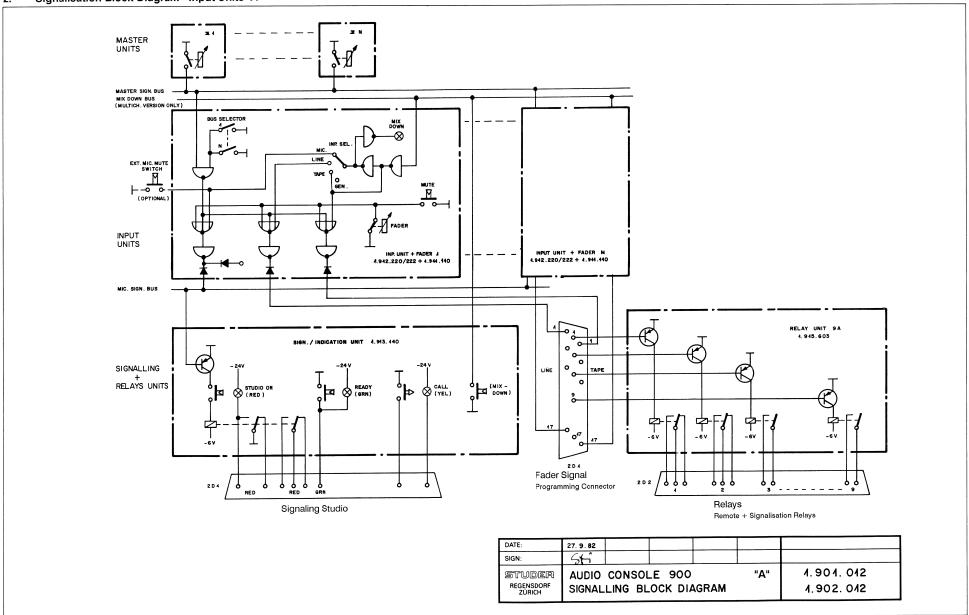
- 1. Audio Block Diagram
- 2. Signalisation Block Diagram Input Units A
- 3. Signalisation Block Diagram Input Units B
- 4. Block Diagram PFL / P.Solo System

EDITION: 26. August 1991

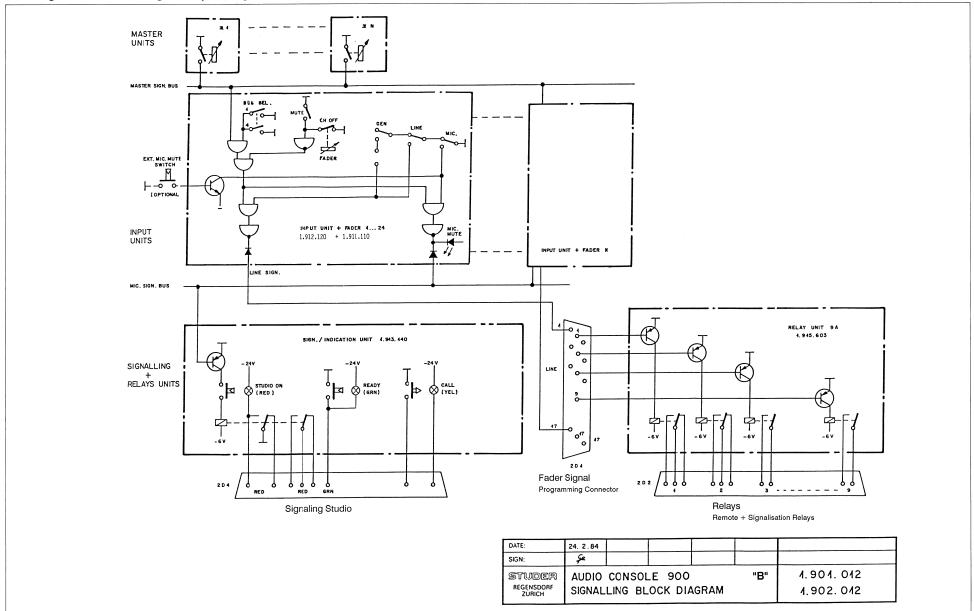
1. Audio Block Diagram

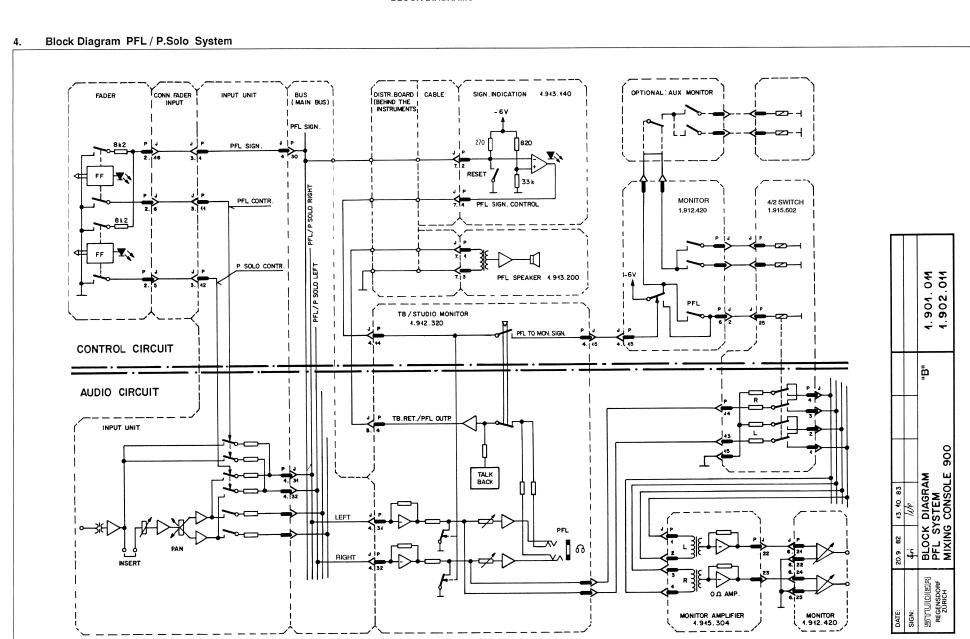
Projektspezifische Unterlagen

2. Signalisation Block Diagram Input Units A



3. Signalisation Block Diagram Input Units B





KAPITEL 3: Einmessen

1.	Allgem	eines	1
••	1.1 1.2 1.3 1.4 1.5 1.6	Pegel-Definition	1 3 3
	1.8	Entmagnetisieren von Mikrofon-Eingangsübertragern	/
2.	Abglei	chanleitungen Faderpanel	8
	2.1 2.2	Eingangs-Fader Mono/Stereo	9
3.	Abglei	chanleitungen Input-Panel	10
	3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8	Eingangseinheiten Mono "A"	12 13 14 15 16
4.	Abgleid	chanleitungen Instrumenten-Panel	21
	4.1 4.2 4.3 4.4	PPM-Zeigerinstrumente 1.913.220/221 VU-Zeigerinstrumente 1.913.230/231 Korrelator 2CH / 4 CH 1.913.210/211 AUX-Anzeigeinstrumente VU / PPM 1.913.130 Testgenerator 1.913.150	21 22 23

1. Allgemeines

1.1 Pegel-Definition

Pegelangaben:

Nennpegelangaben in dBu basieren ausschliesslich auf einem festgelegten Spannungswert als Bezugsgrösse:

Nennpegel in dBu:

Nennpegel = Pegel bei Vollaussteuerung

Der Nennpegel entspricht dem Pegel bei Vollaussteuerung. Die Begriffe Nominalpegel, Studio- und Leitungspegel werden synonym verwendet. Der Nennpegel gilt für relative Pegelangaben als 0dB-Wert.

+10dBu \triangleq 2,45 $V_{eff.}$ +15dBu \triangleq 4,36 $V_{eff.}$

Aussteuerungspegel:

0 dB PPM = Nennpegel

0 VU = Nennpegel minus 6 dB*

 * 6dB entsprechen einem verbreiteten Wert für den Vorlauf (Lead) des VU-Instrumentes.

PPM-Pulte

Peak Program Meter zeigen als Quasispitzenwert-Instrumente den Effektivwert einer Sinusspannung an. Ein Signal mit Nennpegel ergibt eine 0dB-Anzeige.

VU-Pulte

VU-Instrumente zeigen bei einem Dauerton einen um den Vorlauf zu hohen Wert an. Für eine 0VU-Anzeige muss der Pegel des Testsignals um den Vorlauf vermindert werden.

VU-Pulte werden häufig auf einen Nennpegel von +10dBu eingestellt, d.h. bei 6dB Vorlauf des VU-Meters wird ein Pegel von +4dBu mit 0VU angezeigt.

Verstärkung/Dämpfung:

Relative Pegelangaben in dB geben Auskunft über das Verstärkungs- bzw. Dämpfungsmass einer aktiven (z.B. Verstärkerstufe) oder passiven (z.B. Potentiometer) Schaltungskomponente innerhalb eines Schaltkreises.

Die folgende Tabelle setzt Spannungsverhältnisse (Ausgang ÷ Eingang) zu Dezibelwerten in Beziehung (gerundete Faktoren):

	dB	0	1	2	3	6	10	14	20	26	34	40
Faktor	Verstärkung	1	1,1	1,2	1,4	2	3,2	5	10	20	50	100
	Dämpfung	1	0,9	0,8	0,7	0,5	0,3	0,2	0,1	0,05	0,02	0,01

1.2 Umrechnungstabelle der Spannungspegel: Volt ↔ dBu

U ₁	uV —	μV			U ₁	μ۷ —		dBu	
<u>U</u> 2	mV —		dBu	dBu	U ₂	mV —		dBu	ubu
O2	V —	dBu	T			V —	—dBu	Т	
1	0,775	±0	-60	-120	31,6	24,5	+30	-30	-90
1,12	0,87	+1	-59	-119	35,5	27,5	+31	-29	-89
1,26	0,98	+2	-58	-118	39,8	30,8	+32	-28	-88
1,41	1,09	+3	-57	–117	44,7	34,6	+33	-27	-87
1,59	1,23	+4	-56	-116	50,1	38,8	+34	-26	-86
1,78	1,38	+5	-55	–115	56,2	43,6	+35	-25	-85
2,00	1,55	+6	-54	-114	63,1	48,9	+36	-24	-84
2,24	1,73	+7	-53	-113	70,8	54,8	+37	-23	-83
2,51	1,95	+8	-52	-112	79,4	61,5	+38	-22	-82
2,82	2,18	+9	-51	-111	89,1	69,0	+39	-21	– 81
3,16	2,45	+10	-50	-110	100	77,5	+40	-20	-80
3,55	2,75	+11	-49	-109	112	86,9	+41	-19	- 79
3,98	3,08	+12	-48	-108	126	97,5	+42	-18	– 78
4,47	3,46	+13	-47	– 107	141	109,4	+43	–17	– 77
5,01	3,88	+14	-46	-106	159	122,8	+44	-16	<i>–</i> 76
5,62	4,36	+15	-45	-105	178	137,7	+45	-15	- 75
6,31	4,89	+16	-44	-104	200	154,5	+46	-14	-74
7,08	5,48	+17	-43	-103	224	173,4	+47	-13	-73
7,94	6,15	+18	-42	-102	251	194,6	+48	-12	-72
8,91	6,90	+19	-41	-101	282	218,3	+49	-11	-71
10,0	7,75	+20	-40	-100	316	244,9	+50	-10	- 70
11,2	8,69	+21	-39	-99	355	274,8	+51	-9	-69
12,6	9,75	+22	-38	-98	398	308,4	+52	-8	-68
14,1	10,9	+23	-37	-97	447	346,0	+53	- 7	<i>–</i> 67
15,8	12,3	+24	-36	-96	501	388,2	+54	-6	-66
17,8	13,8	+25	-35	-95	562	435,6	+55	– 5	-65
20,0	15,5	+26	-34	-94	631	488,7	+56	-4	-64
22,4	17,3	+27	-33	-93	708	548,4	+57	-3	-63
25,1	19,5	+28	-32	-92	794	615,3	+58	-2	-62
28,2	21,8	+29	-31	-91	891	690,4	+59	-1	-61
31,6	24,5	+30	-30	-90	1000	774,6	+60	±0	-60

Die fettgedruckte Kolonne enthält Spannungswerte. Die drei anschliessenden Kolonnen zeigen die entsprechenden Dezibelwerte bei Interpretation der Spannungen als Volt, Millivolt oder Mikrovolt. Die Kolonne U1/U2 gibt die Spannungsverhältnisse an, die den auf Volt bezogenen dBu-Werten entsprechen.

Der Tabelle liegt die Definition $odBu = 0,775V_{eff}$ zugrunde.

D3/2 EDITION: 11. September 1991

1.3 Notwendigkeit des Einmessens

Jedes ab Herstellerwerk ausgelieferte Mischpult verfügt über ein Prüfprotokoll, in dem die Daten der Endprüfung eingetragen sind, wie:

- Abgleich auf kundenspezifischen Nennpegel
- Frequenzgang, Klirrfaktor, Geräuschabstand, Rauschspannung und Übersprechdämpfung.

Das Einmessen des Mischpultes ist bei Änderungen der Betriebsbedingungen (Nennpegel) am Einsatzort oder nach Modifikationen am Mischpult erforderlich. Einzige turnusgemässe Wartungsmassnahme bildet das nachfolgend beschriebene Entmagnetisieren der Eingangsübertrager. (vgl. 1.8)

Hinweis:

Ab Herstellerwerk ausgelieferte (Ersatz-) Einschübe sind werkseitig auf einen Nennpegel von +6dBu abgeglichen und können direkt in das einzumessende Mischpult eingesetzt werden.

1.4 Benötigte Messgeräte und Hilfsmittel

- Tonfrequenz-Generator / Rs ≤ 200Ω
- NF-Voltmeter, $Rz_{in} \ge 10k\Omega$
- 2 Kanal Kathodenstrahl-Oszillograph
- Abgleich-Schraubenzieher, Grösse 2
- Sammelschienen-Adapter zur Kontaktierung ausgebauter Einschübe mit der Sammelschiene. Es werden mindestens benötigt:
 - 1 Verlängerungsprint mit 32–Pol Steckern Best.–Nr. 1.228.322.81 2 Verlängerungsprints mit 64–Pol Steckern Best.–Nr. (1 Stk.) 1.228.327.81
- 2 Ausziehwerkzeuge für Einschübe
 Best.-Nr. (1 Stk.) 1.912.000.06
- Feste, nicht leitende Matte (Gummi oder Karton), als Unterlage für ausgebaute, über den Adapter mit der Sammelschiene kontaktierte Einschübe (werden mit Vorteil auf das Bedienungsfeld des Mischpultes gelegt). Abmessung ca. 40 x 25 cm.

1.5 Elektrostatisch empfindliche Bauteile "ESE"



Statische Elektrizität:

Viele Materialien der heutigen Arbeitswelt sind mögliche Quellen statischer Elektrizität. Unter geeigneten Voraussetzungen können sich dadurch Gegenstände und Personen auf sehr hohe Potentiale aufladen. Bei Entladung dieser Potentiale können Impulse von beachtlicher Spitzenleistung auftreten. Findet auch nur ein kleiner Teil dieser Energie seinen Weg in Bauelemente der Elektronik, werden diese zerstört oder beschädigt.

Umgang mit ESE-Platinen:

Es muss deshalb unser Ziel sein, unsere Produkte vor Fehlern und Mängeln durch elektrostatische Entladung zu bewahren. Richtiger Umgang mit elektronischen Baugruppen ist im Bereich der Gerätewartung von grösster Wichtigkeit. Dabei gilt es einige einfache Verhaltenshinweise zu befolgen:

- Entlade Dich durch Anfassen von Erde, bevor Du eine elektronische Baugruppe in die Hand nimmst.
- 2. Gib dem Partner zuerst die Hand und dann die Baugruppe.
- Fasse einen bestückten Print grundsätzlich nur am Rand oder an der Frontplatte an.
- Berühre niemals Leiterbahnen, Anschlusspunkte oder Bauelemente, ohne Dich vorher zu entladen.
- **5.** Schalte die Netzspannung aus, bevor Du eine ESE-Baugruppe herausnimmst oder einsteckst.
- 6. Transportiere und lagere ESE-Baugruppen immer in ESE-Verpackungen.
- 7. Arbeite nur mit ESE-geeigneten und geprüften Werkzeugen.
- **8.** Trage bei Arbeiten an elektrischen Baugruppen, egal ob ESE oder nicht, immer das Erdungsarmband.
- Halte Styropor, PVC-Folien, Plastiksäcke und ähnliche Materialien weit entfernt von ESE-Baugruppen.

Wir empfehlen, den Arbeitsplatz mit einer geerdeten Unterlage auszurüsten:

ESE-Schutzmatte

Dieses Kit enthält eine Schutzmatte (60 \times 70cm) mit Erdungskabel und Erdungsarmband für Arbeiten an elektrischen Baugruppen.

Best. Nr. **20.020.001.44**

1.6 Messgrundlagen

Temperatur:

Das Einmessen des Mischpultes erfolgt bei erreichter Betriebstemperatur. (ca. 15 Minuten nach dem Einschalten)

Last:

- Einschleifpunkte (INSERTs), Monitor–, Vorhör– und Kommando– (TB–) Ausgänge sind **nicht** zu belasten ($R_L \ge 10 k_{\Omega}$)
- Leitungsausgänge (Gruppen, Summen, Hilfssummen) sind mit 600Ω Last abzuschliessen.

Testsignal:

Sinuston / 1 kHz

Pegelreferenz:

Alle Angaben dieser Einmessanleitung beziehen sich auf einen Nennpegel von +6dBu.

Andere Nennpegel bedingen Messwerte gemäss folgender Tabelle:

Pegelübersicht:

Nennpegel	Insert	Insert	Leitungs–	Anzeige 0VU	Anzeige OdB
	symmetrisch	asymmetrisch	ausgänge	(6dB Vorlauf)	(PPM)
+6dBu	+6dBu	0dBu	+6dBu	0dBu	+6dBu
+10dBu	+10dBu	+4dBu	+10dBu	+4dBu	+10dBu
+15dBu	+15dBu	+9dBu	+15dBu	+9dBu	+15dBu

Insert-Pegel:

Die symmetrischen Einschleifpunkte liegen auf Nennpegel, während asymmetrische Ausführungen einen um 6dB tieferen Pegel führen.

D3/4

1.7 Messaufbau

Ein- und Ausbau der Einschübe:

Die einzumessenden Einheiten müssen ausgebaut und über Printverlängerungen wieder ans Mischpult angeschlossen werden.

Die 0Ω -Bus-Verstärker sind empfindlich auf Spannungsspitzen, wie sie beim Einstecken der Baugruppen unter Spannung entstehen können. Zum Schutz des Pultes und der Peripherie dürfen folgende Einschübe **nur bei ausgeschaltetem Pult** aus- oder eingebaut werden:

VCA-Fader; Master-Fader; Gruppen-Fader; Aux-Master Einheit; Studio Monitor; CR Monitor.

Symmetrische Messgeräte:

NF-Voltmeter und **NF-Generator** müssen grundsätzlich über **symmetrische** Ein- resp. Ausgänge verfügen.

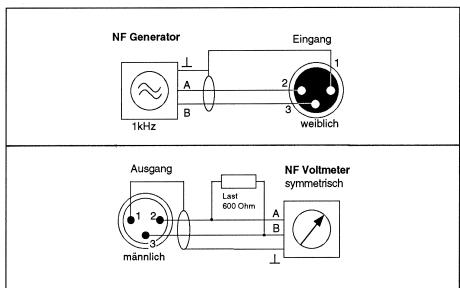


Fig. 1 Anschluss des NF-Generators mit symmetrischer Leitung. Messungen mit dem NF-Voltmeter erfolgen je nach Messpunkt mit oder ohne Belastung des Ausgangs.

Asymmetrische Messgeräte:

Asymmetrischen Messgeräten ist ein Symmetrier-Übertrager vorzuschalten. Ist dies nicht möglich, kann behelfsmässig wie folgt beschaltet werden:

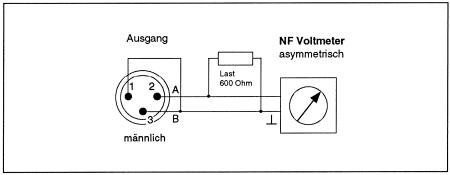


Fig. 2

Die **b**-Leitung (3) mit der Audiomasse (1) verbunden bildet mit der **a**-Leitung (2) einen asymmetrischen Messpunkt. Diese Schaltung ist jedoch nicht für Messungen bei hoher Aussteuerung anwendbar. (Clipping-Effekt bei elektronisch symmetrierten Ausgängen, z.B. INSERT)

Messung an Insertpunkten:

Die Schaltkontakte der Klinkenbuchsen unterbrechen den Signalfluss durch den Kanal, sobald ein Stecker angeschlossen wird. Bei Messungen an INSERT-Punkten darf der Signalweg jedoch nicht unterbrochen werden. Aus diesem Grund ist folgendes zu beachten:

- Asymmetrische Inserts müssen durchverbunden werden (SEND → RETURN).
- Symmetrische Inserts können an der Insert SEND-Buchse gemessen werden. Das Signal wird nur bei Belegung der RETURN-Buchse unterbrochen.

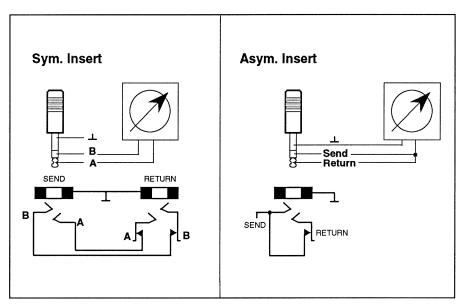


Fig. 3 Messung an symmetrischen und asymmetrischen Inserts. Der Signalfluss darf nicht unterbrochen werden.

D3/6 EDITION: 11. September 1991

1.8 Entmagnetisieren von Mikrofon-Eingangsübertragern

Unerlaubtes Anschliessen asymmetrischer Eingangsquellen oder unbeabsichtigter Masseschluss der a/b-Tonadern von Mikrofon-Eingängen mit zugeschalteter Phantomspeisung treiben die Eingangsübertrager in die Sättigung und bewirken deren permanente Magnetisierung (Remanenz).

Diese äussert sich nachteilig durch den sogenannten Mikrofonie-Effekt: Leichte mechanische Einwirkungen auf das Mischpult, z.B. das Antippen von Einschüben, bewirken eine hörbare Modulation über die Lautsprecher, auch bei nicht belegten Mikrofon-Eingängen.

Auch kann sich Remanenz in den Übertragern im Laufe längerer Betriebsdauer kumulieren.

Es empfielt sich deshalb, alle Mikrofon-Eingänge periodisch, und vor Einmessvorgängen, zu entmagnetisieren:

Vorgehen:

- Mischpult ausschalten. (zum Schutze angeschlossener Lautsprecher)
- NF-Generator an Mikrofon-Eingang anschliessen.
 Das Testsignal muss gleichspannungsfrei sein, damit der Eingangsübertrager nicht magnetisert wird. Die folgende Schaltung sperrt Gleichstromanteile:

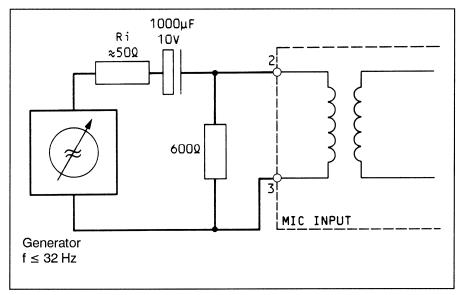


Fig. 4 Anschluss des NF-Generators an Mikrophoneingänge.

- Kondensator C=1000μF/10V sperrt Gleichstrom-Anteile.
- Widerstand R600 α dient der Entladung des Kondensators von Gleichstrom-Anteilen.
- Frequenz ≤32Hz sukzessive auf Einspeispegel von 0V...3V erhöhen.
- Einspeispegel langsam auf 0V zurückregeln.

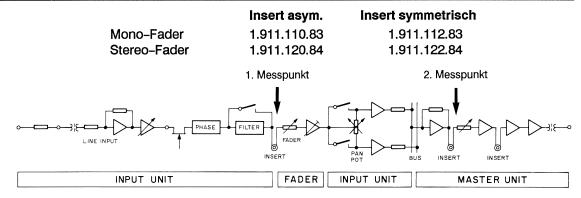
2. Abgleichanleitungen Faderpanel

Die jeweilige Fadereinheit zum Einmessen ausbauen und den Printstecker P1 über Verlängerungskabel mit dem Pult verbinden.

Für den Abgleich sind Filter, Equalizer, Balance- bzw. Panoramapotentiometer auszuschalten.

2.1 Eingangs-Fader Mono/Stereo,

1.911.110/112/120/122



- Testsignal mit Nennpegel in LINE Eingang einspeisen.
- AC-Voltmeter an PF Insert Send der Eingangseinheit anschliessen.
 (1. Messpunkt)
- Regler LINE GAIN der Eingangseinheit in Mittelstellung einrasten und Filter ausschalten. Werden am PF Insert nun nicht die folgenden Werte gemessen, muss die Eingangseinheit eingemessen werden. (siehe 3.)
 - a) asymmetrischer Insert: 0dBu
 - b) symmetrischer Insert: +6dBu
- Fader auf **0dB** positionieren.
- Auf der Eingangseinheit eine Summe (Master Unit) anwählen und Voltmeter am PF Insert SEND dieser Summe anschliessen. (entspricht dem Pegel nach dem Eingangs-Fader; 2. Messpunkt)
- Abgleich des Pegels mit den Trimmern R23 des Mono Faders bzw. mit R109 (links) und R209 (rechts) des Stereo Faders:
 - a) bei asymmetrischem Summen-Insert: **0dBu**
 - b) bei symmetrischem Summen-Insert: +6dBu

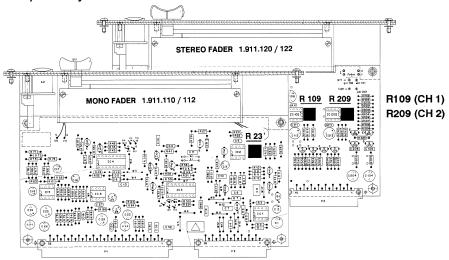


Fig. 5 Abgleichelemente der Mono- und Stereo-Fader.

D3/8 EDITION: 2. Oktober 1993

2.2 Summen-Fader Mk II

1.911.315/325/335

	ohne Limiter	mit Limiter
Mono Master Unit Mk II	1.911.315	1.911.317
Dual Master Unit Mk II	1.911.325	1.911.335

Die verwendeten Platinen tragen die Nummern 1.911.323 (Kanal 1 bzw. Mono) und 1.911.324 (Kanal 2).

Pegel des AF-Inserts:

- Testsignal mit Nennpegel über einen richtig eingemessenen Line Eingang einspeisen und auf gewünschte Summe schalten.
- Eingangsfader und Summenfader auf 0 dB aufziehen.
- Voltmeter an AF-INSERT OUT anschliessen.
- AF Insert OUT mit R142 für CH1 (bzw. R342 für CH2) auf 0dBu einmessen.

Summenausgang:

- Testsignal wie oben einspeisen und Eingangsfader in Position '0dB' bringen.
- Entsprechende Summe anwählen (Bus Selector) und Summen-Fader ebenfalls auf 0dB positionieren.
- Voltmeter am Summenausgang anschliessen und Kanal 1 mit R152 (bzw.Kanal 2 mit R352) auf Nennpegel (+6dBu) einstellen.
- Danach bei der Eingangseinheit den nächsten Summenkanal anwählen und sinngemäss einstellen. Alle Summenregler auf diese Weise abgleichen.

Klirrabgleich:

Ein Klirrabgleich erübrigt sich, da die Ausgangsstufe klirrkompensiert ist.

Anmerkung:

- Bauteile des ersten Kanals (Print Nr. 1.911.323) haben Positions-Nummern von 100 bis 299, die des zweiten Kanals (Print Nr.1.911.324) von 300 bis 499.
- Die beiden Kanäle der Stereo Ausführungen sind baugleich und vollständig getrennt. Die Prints verhalten sich jedoch spiegelsymmetrisch zueinander.

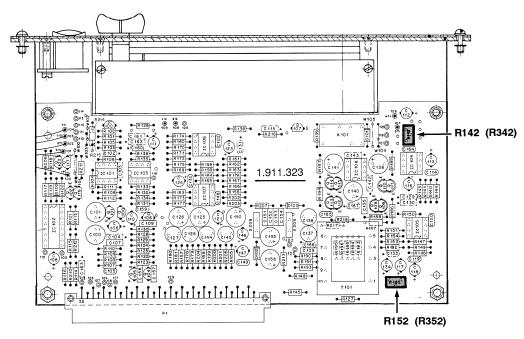


Fig. 6 Abgleichelemente der Master Unit Mkll (Kanal 2 in Klammern)

Kanal 1: (Σ1, 3, 5..)
 R142: AF-Insert OUT
 R152: Pegel Summenausgang
 Kanal 2: (Σ2, 4, 6..)
 R342: AF-Insert OUT
 R352: Pegel Summenausgang

3. Abgleichanleitungen Input-Panel

Die einzumessende Eingangseinheit ausbauen und die Printstecker P3, P4 sowie P6 mit Verlängerungskabeln anschliessen. Den Abgleich nur bei linearer Einstellung vornehmen. (Filter, EQ, BAL, PAN, Ø, Limiter ausschalten.

Alle Pegelangaben basieren auf einem **Nennpegel von +6dBu**. Vergleiche dazu die Abschnitte 1.1 "Pegeldefinitionen" und 1.6 "Messgrundlagen".

3.1 Eingangseinheiten Mono "A"

1.912.220...226

- Voltmeter an PF-Insert anschliessen. (unter Handauflage; Patch Panel bzw. P6-27) Richtiger Anschluss siehe oben. (1.7 "Messaufbau")
- Beide Filter ausschalten.
- Entzerrer mit Taste EQUALIZER ausschalten.

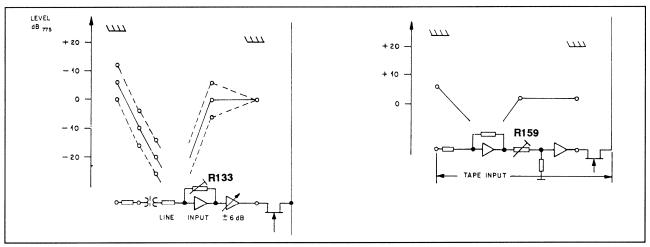


Fig. 7

Line Eingang:

- Testsignal mit Nennpegel in Line Eingang einspeisen.
- Korrektur-Potentiometer LINE GAIN in Kalibrierstellung einrasten.
- Pegel mit R133 auf 0dBu abgleichen.

Tape Eingang:

- Testsignal mit Nennpegel in Tape Eingang einspeisen.
- Pegel mit R159 auf 0dBu abgleichen.

Gleichtaktunterdrückung:

 Am elektronisch symmetrierten Tape Eingang kann die Gleichtaktunterdrückung abgeglichen werden. Das Testsignal auf die beiden Tonadern des Eingangs schalten, wie in Fig. 8 gezeigt.

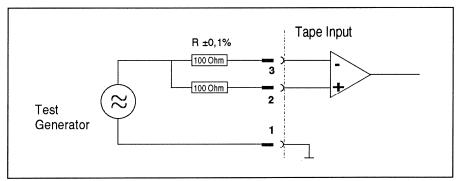


Fig. 8 Einspeisung des Testsignals zum Abgleich der Gleichtaktunterdrückung.

D3/10

■ Den Pegel am PF Insert mit R153 auf Minimalwert einstellen. (Gleichtaktunterdrückung bei 1kHz/+6dBu ≥ 80dB d.h. Messwerte im μV-Bereich.)

Mikrophon Eingang:

Für den Mikrophoneingang sind keine Einstellungen erforderlich. Entmagnetisierung des Eingangsübertragers vgl. 1.8.

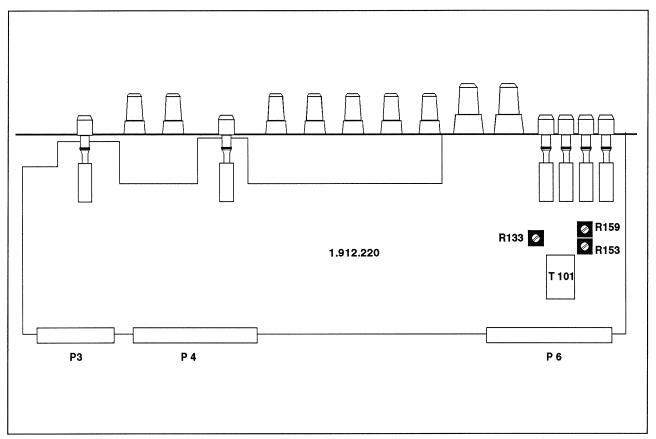


Fig. 9 Abgleichelemente der Mono Eingangseinheiten Version "A"

EDITION: 12. September 1991 D3/11

3.2 Eingangseinheiten Stereo Hochpegel "A"

1.912.240...243

Die beiden Line Eingänge benützen die gleiche Eingangsstufe. Es genügt also, einen der Eingänge einzumessen.

- Potentiometer GAIN in Mittelstellung einrasten.
- MONO Taste, STEREO SPREAD und EQUALIZER ausschalten.
- Eingangswahltaste LINE 1 drücken.

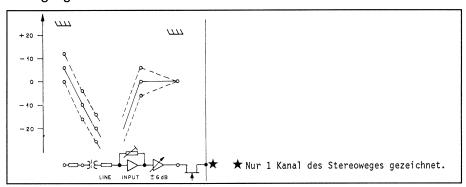


Fig. 10

Line Eingang links:

- Testsignal mit Nennpegel in Eingang LINE 1 (links) einspeisen.
- Voltmeter an **PF-Insert left** (Patch bzw. P3-15) anschliessen.
- Linken Kanal mit Trimmer R114 auf 0dBu abgleichen.

Line Eingang rechts:

- Testsignal mit Nennpegel in Eingang LINE 1 (rechts) einspeisen.
- Voltmeter an PF-Insert right (Patch bzw. P3-13) anschliessen.
- Rechten Kanal mit Trimmer R214 auf 0dBu abgleichen.

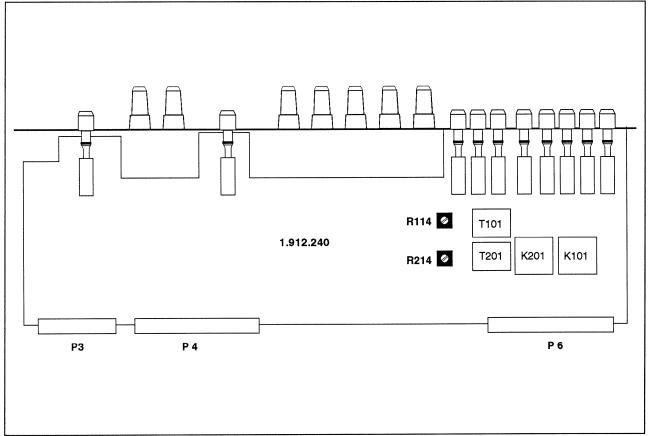


Fig. 11 Abgleichelemente der Eingangseinheiten Stereo Hochpegel Version "A".

3.3 Eingangseinheiten Stereo Universal "A"

1.912.250...253

■ FILTER, EQUALIZER und STEREO SPREAD ausschalten.

Line Eingang:

- Potentiometer LINE GAIN in Mittelstellung einrasten.
- Eingang LINE anwählen.

linker Kanal

- Testsignal mit Nennpegel in Eingang LINE links einspeisen.
- Voltmeter an PF-Insert left (Patch bzw. P3-15) anschliessen.
- Linken Kanal mit Trimmer R125 auf 0dBu abgleichen.

rechter Kanal

- Testsignal mit Nennpegel in Eingang LINE rechts einspeisen.
- Voltmeter an PF-Insert right(Patch bzw. P3-13) anschliessen.
- Rechten Kanal mit Trimmer R325 auf 0dBu abgleichen.

Mikrophon Eingang:

Für den Mikrophoneingang sind keine Einstellungen erforderlich. Entmagnetisierung des Eingangsübertragers vgl. 1.8.

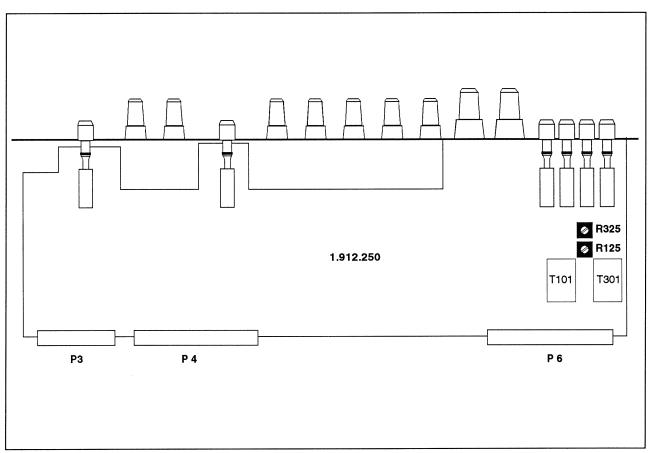


Fig. 12 Trimmer für den Abgleich des Line-Eingangs.

EDITION: 11. September 1991 D3/13

3.4 Eingangseinheiten Mono "B"

1.912.120/122

■ EQUALIZER und FILTER ausschalten

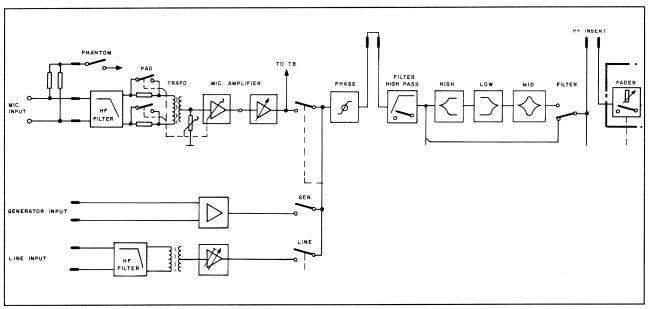


Fig. 13 Blockschaltbild

Line Eingang:

Als einzige Einstellung muss bei dieser Einheit der Pegel des Line Eingangs abgeglichen werden.

- Testsignal mit Nennpegel in LINE Eingang einspeisen.
- Korrektur-Potentiometer LINE GAIN in Kalibrierstellung einrasten.
- Voltmeter an PF-Insert (Patch bzw. P6-27) anschliessen.
- Pegel mit R35 auf 0dBu abgleichen.

Übrige Eingänge:

Die Eingänge für Mikrophon und Generator brauchen keine Pegelanpassung.

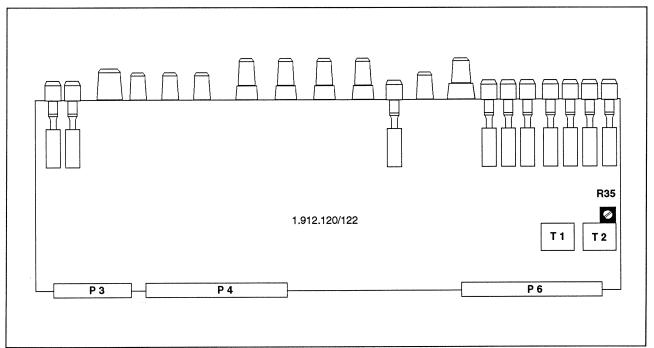


Fig. 14 Abgleichelemente der Mono Eingangseinheiten Version "B".

D3/14

3.5 Eingangseinheiten Stereo Hochpegel "B"

1.912.141...145

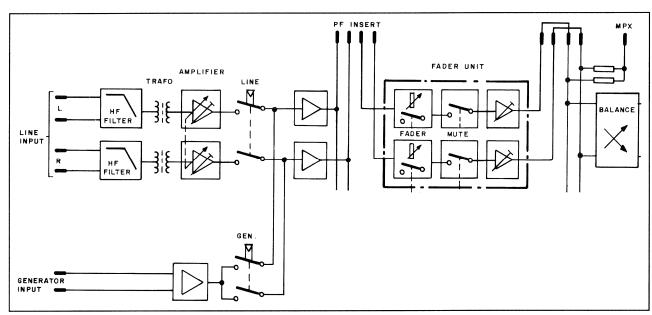


Fig. 15 Blockschaltbild

Line Eingang:

- Testsignal mit Nennpegel in LINE Eingang einspeisen.
- Korrektur-Potentiometer LINE GAIN in Kalibrierstellung einrasten.

linker Kanal

- Voltmeter an PF-Insert left (Patch bzw. P3-15) anschliessen.
- Pegel mit R109 auf 0dBu abgleichen.

rechter Kanal

- Voltmeter an **PF-Insert right** (Patch bzw. P3-13) anschliessen.
- Pegel mit R209 auf 0dBu abgleichen.

Generator:

Der Generator-Eingang braucht keinen Pegelabgleich.

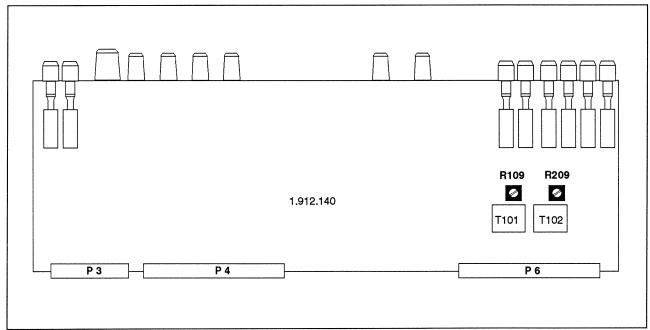


Fig. 16 Abgleichelemente der Stereo Eingangseinheiten Version "B".

3.6 Auxiliary Mastereinheit

1.912.310

AUX-Ausgangspegel:

Die Ausgangspegel der Hilfssummen AUX werden bei Maximalverstärkung im Hilfsweg auf **10dB über dem Nennpegel** abgeglichen.

- Testsignal mit Nennpegel in LINE Eingang 1 einspeisen und Eingangsfader auf 0dB positionieren.
- AUX-Regler des Eingangs in Stellung AF auf Rechtsanschlag öffnen. C
- Die Regler AUX SEND (1...4) der AUX Master Einheit ebenfalls ganz öffnen. ♂

AUX 1 ...3

- Voltmeter an den jeweiligen AUX-Ausgang anschliessen.
- Pegel mit Brückenstecker (0dB/–10dB) und Trimmer auf 10dB über dem Nennpegel abgleichen. Die zu den jeweiligen Hilfswegen gehörenden Abgleichelemente A und Z sind unten dargestellt.

AUX 4

- Einstellvorgang wie oben beschrieben durchführen.
- AUX-Balanceregler (Eingangseinheit) extrem links einstellen und Ausgangspegel AUX 4 links mit R425 auf 10dB über Nennpegel einmessen.
- AUX-Balanceregler (Eingangseinheit) extrem **rechts** einstellen und Ausgangspegel AUX 4 rechts mit **R525** auf 10dB über Nennpegel einmessen.

Klirrabgleich:

Diese Einstellung ist nur nach Reparatur einer Ausgangsstufe notwendig.

- Voltmeter an AUX Ausgang anschliessen.
- 30Hz Sinuston vom Generator auf die zu messende Hilfssumme schalten.
- Testsignal auf einen Ausgangspegel von +24dBu erhöhen und mit den unten angegebenen Trimmpotentiometern auf minimalen Klirr abgleichen.

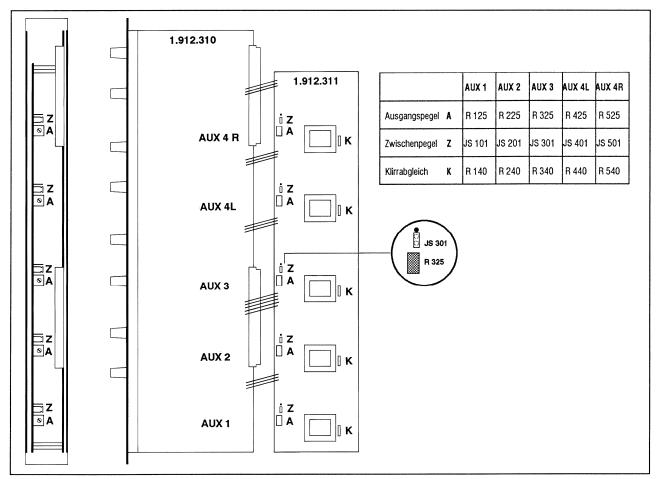


Fig. 17 Abgleichelemente der AUX Master Einheit.

D3/16

3.7 Kontrollraum Monitor

1.912.420

Für den Abgleich darf keine Taste der Einheit gedrückt (d.h. aktiviert) sein.

- Testsignal mit Nennpegel in Eingang EXTERNAL 1 links bzw. rechts einspeisen.
- Den Eingang EXT 1 auf CR Monitor anwählen.
- Monitor VOLUME Potentiometer auf Rechtsanschlag öffnen C.
- BALANCE Regler mit Taste BALANCE IN ausschalten.

Kopfhörer Pegel:

- Voltmeter ohne Last mit einem 6,3mm Jack-Stecker an eine der Kopfhörerbuchsen anschliessen:
 Spitze = linker Kanal / Ring = rechter Kanal / Schaft = 0V
- Pegel mit R7 links bzw. R64 rechts auf +20dBu (7,75V) abgleichen.

CR Monitor:

- Voltmeter ohne Last an CR MONITOR Ausgang links bzw. rechts anschliessen.
- Ausgangspegel mit R30 links, bzw R82 rechts auf +16dBu abgleichen.

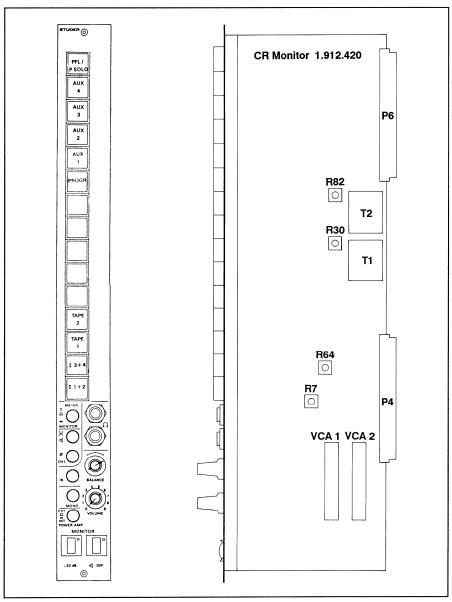


Fig. 18 Abgleichelemente der Kontrollraum-Monitoreinheit 1.912.420.

3.8 Studio Monitor und Kommando-Einheit

1.912.320

Vor dem Einmessen des Studio Monitors muss der Kontrollraum Monitor korrekt abgeglichen sein.

PFL - Pegel:

- Das Testsignal mit Nennpegel in LINE Eingang (Gain: CAL) der Eingangseinheit 1 einspeisen.
- PFL-Taste dieses Eingangskanals drücken.
- Monitor VOLUME des Kontrollraum Monitors auf Rechtsanschlag öffnen C.
- Taste PFL/P.SOLO to MONITOR des Studio Monitors drücken. Das Testsignal wird vor dem PFL/P.SOLO-Regler des Studio Monitors abgegriffen und auf den CR MONITOR Ausgang geschickt.

PFL/P.SOLO-Monitor

- Voltmeter ohne Last an den CR MONITOR Ausgang anschliessen.
- Abgleich mit R67 links bzw. mit R70 rechts auf +16dBu.

PFL/P.SOLO-Kopfhörer

- Potentiometer PFL/P.SOLO auf Rechtsanschlag öffnen C.
- Voltmeter ohne Last an Kopfhörerbuchse PFL/P.SOLO anschliessen.
 Spitze = linker Kanal / Ring = rechter Kanal / Schaft = 0V
- Mit R79 links bzw. mit R87 rechts auf +20dBu abgleichen.

Hinweise:

- Der Studio Monitor wird stummgeschaltet, wenn ein Mikrophonsignal druchgeschaltet ist. Dies wird durch die CUT-LED angezeigt. Mit der Taste RE-IN kann die Stummschaltung aufgehoben werden.
- Die Tasten TB STUDIO und TB SPEAKER senken den Pegel des STUDIO-Ausganges um 20dB und dürfen daher nicht aktiviert sein.

Studio Monitor:

- Testsignal mit **Nennpegel** in einen Monitoreingang EXTERNAL einspeisen und die entsprechende Quellenwahltaste in der Sektion STUDIO drücken.
- Potentiometer STUDIO auf Rechtsanchlag öffnen. ♂
- Voltmeter ohne Last an STUDIO-Ausgang links bzw. rechts anschliessen.
- Mit R11 links bzw. mit R32 rechts auf +16dBu abgleichen.

Studio Kopfhörer:

Diese Einstellung betrifft den Pegel, mit welchem das Studio Monitor Signal zum Studio-Kopfhörer gesendet wird. (Anschluss z.B. an Talk Back Box)

- Testsignal wie für den Studio Monitor beschrieben einspeisen.
- Voltmeter ohne Last an den Ausgang TB-Box (D-Typ) oder an die Kopfhörerbuchse der TB-Box (VOLUME ganz öffnen!) anschliessen. (Spitze = linker Kanal / Ring = rechter Kanal / Schaft = 0V)
- Mit R7 links bzw. mit R28 rechts auf +20dBu abgleichen.

D3/18

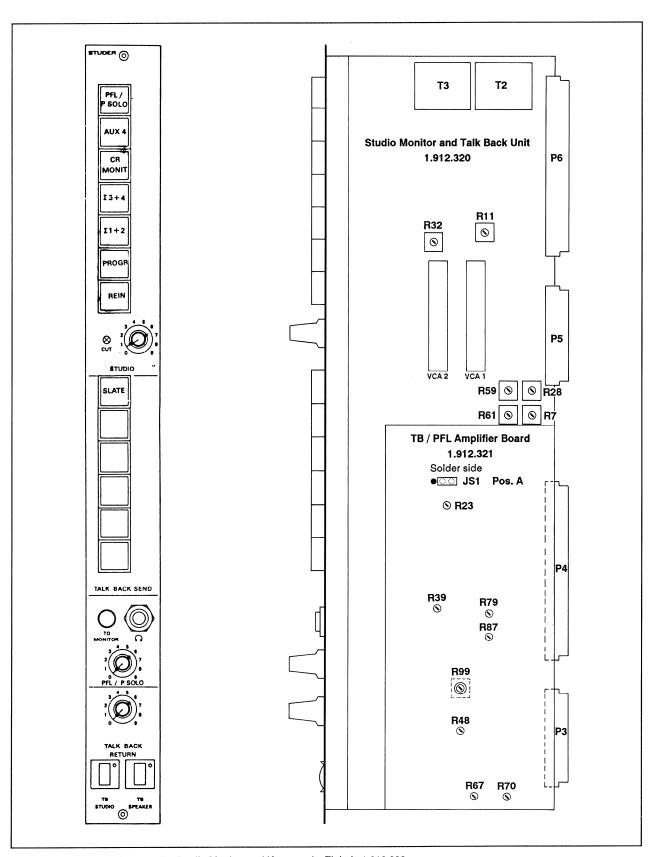


Fig. 19 Abgleichelemente der Studio Monitor und Kommando-Einheit 1.912.320.

EDITION: 12. September 1991 D3/19

Talk Back Pegel:

Das Gegensprechmikrophon des Kontrollraums wird mit drei Trimmern eingestellt: Eingangsverstärkung, Einspeisung auf Studio Monitor und auf Studio Kopfhörer getrennt.

■ In die Mikrophonbuchse am Mischpult (Schwanenhals) das Testsignal mit -60dBu einspeisen. Anschluss symmetrisch an Pin 1 und 3 des DIN-Steckers.

TB-Mikrophon (Kontrollraum)

- Taste TB SEND A drücken.
- Voltmeter ohne Last an TB EXTERNAL Ausgang 1 anschliessen.
- Abgleich der Limiterschwelle des TB-Weges mit R99 auf +6dBu. Der Trimmer ist durch eine Bohrung in der Platine 1.912.321 zugänglich. (Der Jumper JS1 (1.912.321) soll auf Position A gesetzt sein.)

TB auf Studio Monitor

- Impulstaste TB STUDIO betätigen.
- Voltmeter ohne Last an linken Kanal des STUDIO-Ausgangs anschliessen.
- Mit R59 auf +6dBu* abgleichen. (Trimmer R59 wirkt auf beide Kanäle)
 * = Werkeinstellung. Pegel abhängig von gewünschter TB-Lautstärke.

TB auf Studio Kopfhörer

- Voltmeter ohne Last an den Ausgang TB-Box (D-Typ) oder an die Kopfhörerbuchse der TB-Box (VOLUME ganz öffnen!) anschliessen. (Spitze = linker Kanal / Ring = rechter Kanal / Schaft = 0V)
- Pegel mit R61 auf +6dBu* einstellen. (Trimmer R61 wirkt auf beide Kanäle.)
 * = Werkeinstellung. Pegel abhängig von gewünschter TB-Lautstärke.

TB Return

- Testsignal mit +6dBu in TB RETURN Eingang einspeisen.
- Dieses Signal wird von der TB-Signalisation zum PFL/TB-Lautsprecher durchgeschaltet. Von extern muss daher eine TB-Taste gedrückt werden. (Das interne Signal 'E' öffnet den TB RET-Weg. Schema 1.912.320; Seite 2)
- Potentiometer TB RETURN ganz öffnen ♂.
- Einstellung TB RETURN INPUT mit R48 auf gewünschte Maximallautstärke.

Dämpfung TB Return

Das TB-Signal des Sprechers könnte über das TB-Mikrophon im Kontrollraum rückgekoppelt werden. Aus diesem Grund wird der TB Return gedämpft, sobald im Kontrollraum eine TB-Taste gedrückt wird. R39 bestimmt das Mass dieser Dämpfung.

- Testsignal mit -60dBu in die Buchse des Sprecher TB-Mikrophons einspeisen. (D-Typ)
- Eine TB-Taste auf dem Pult drücken. Die dadurch eingeschaltete Dämpfung des TB Returns mit R39 auf gewünschten Wert einstellen. Werkeinstellung: -20dB.

(Das interne Signal 'D' dämpft den TB RET-Weg. Schema 1.912.320; Seite 2)

Sprecher TB-Mikrophon

- Testsignal und Messanordnung wie für die Dämpfung des TB Returns beibehalten.
- Gleich wie beim TB RETURN muss die Signalisation aktiviert sein. (s.o.)
- Potentiometer TB RETURN ganz öffnen C.
- Einstellung SPEAKER MIC mit R23 auf gewünschte Maximallautstärke.

D3/20

4. Abgleichanleitungen Instrumenten Panel

4.1 PPM-Zeigerinstrumente

1.913.220/221

- Testsignal mit Nennpegel zum Summenausgang durchschalten..
- Mit R4 (Fig. 20) am zugehörigen Instrument den Zeigerausschlag auf 0dB einstellen.

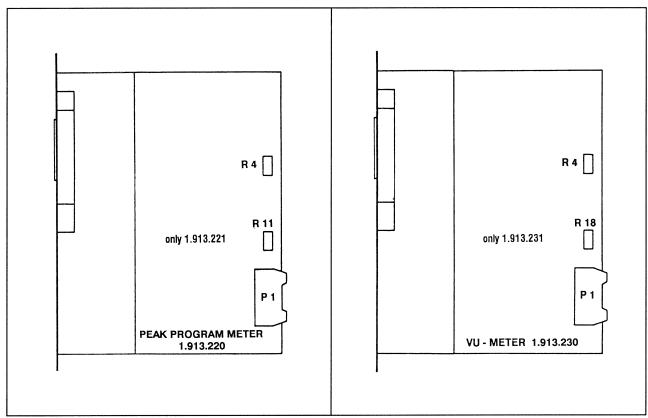


Fig. 20 Abgleich des PPM

Fig. 21 Abgleich des VU-Meters

4.2 VU-Zeigerinstrumente

1.913.230/231

- Testsignal am Summenausgang Pegel auf Nennpegel minus 'Lead' (=Vorlauf des VU-Instruments, vgl. 1.6) einstellen.
- Mit R4 (Fig. 21) am zugehörigen Instrument Zeigerausschlag auf 0VU einstellen. Damit ist der notwendige Vorlauf von beispielsweise 6dB eingestellt.

4.3 Korrelator 2CH / 4 CH

1.913.210/211

- Testsignal mit Nennpegel zu beiden Kanälen einer Stereosumme durchschalten.
- Spannung an Testpunkt 1 (TP1) mit R4 bzw. an Testpunkt 2 (TP2) mit R13 auf -18dBu (100mV AC) abgleichen.
- Das einkanalige Testsignal (Mono) ist auf die Stereosumme aufgeschaltet.
 Beide Summenkanäle sind darum phasengleich korreliert. Mit R26
 Zeigerausschlag des Korrelators auf +1 einstellen.

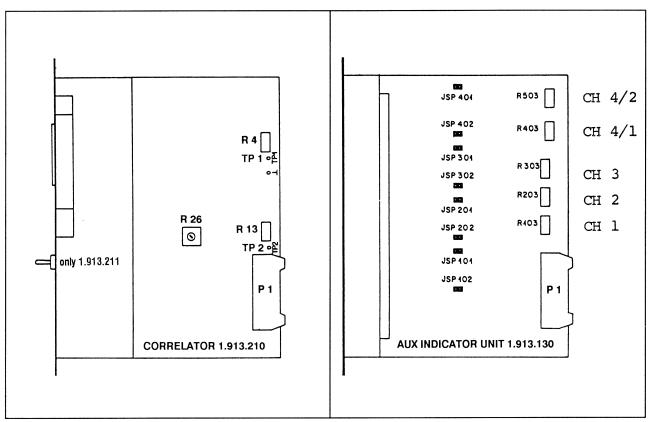


Fig. 22 Abgleich des Korrelators

Fig. 23 Abgleich des AUX-Instruments

D3/22

4.4 AUX-Anzeigeinstrumente VU / PPM

1.913.130

Auf dieser Einheit befinden sich die vier Instrumente der Hilfsausgänge. Die Anzeige-Charakteristik kann den Hauptinstrumenten angepasst werden. Es ist eine Wahl zwischen PPM und VU möglich.

Die Wahl wird mit Brückensteckern (Jumpers) vorgenommen. Diese Punkte sind mit JSP bezeichnet. (Fig. 23).

VU-Charakteristik:

Die Jumper müssen wie folgt gesetzt sein:

JSP 102 → Instrument AUX 1 JSP 202 → Instrument AUX 2 JSP 302 → Instrument AUX 3 JSP 402 → Instrument AUX 4

VU-Meter: Einstellung für Spitzenpegel (Peak Level) +10 dBu / +12 dBu.

Für diese beiden Spitzenpegel liegt der Pegel für eine 0VU-Anzeige bei +4 dBu.

Der Vorlauf (Lead) beträgt also 6dB resp. 8dB.

AUX 1...3 (VU) Testsignal mit +4dBu an den Eingang des jeweiligen Instrumentes anlegen.

Einstellen der Anzeige auf **0VU** mit Trimmer CH1 ... CH3. (siehe Fig. 23)

AUX 4 (VU)

AUX 4 zeigt die **Monosumme** des Stereohilfsweges an. Jeder Kanal einzeln wird auf eine Anzeige von **-3VU** eingestellt. Beide Kanäle zusammen ergeben dann 0VU.

- +4dBu an AUX 4/1 (linker Kanal), kein Pegel an AUX 4/2.
- Mit Trimmer CH 4/1 auf –3VU–Anzeige einstellen.
- +4dBu an AUX 4/2 (rechter Kanal), kein Pegel an AUX 4/1.
- Mit Trimmer CH 4/2 auf –3VU–Anzeige einstellen.

PPM-Charakteristik:

Für den Betrieb als Peak Program Meter gelten folgende Jumper-Einstellungen:

JSP 101 → Instrument AUX 1 JSP 201 → Instrument AUX 2 JSP 301 → Instrument AUX 3 JSP 401 → Instrument AUX 4

AUX 1...3 (PPM)

Nennpegel an den Eingang der Instrumente anlegen. Einstellen mit Trimmer CH1...CH3 auf Anzeige **0dB**.

AUX 4 (PPM)

Dieser Stereo-Hilfsweg wird prinzipiell gleich eingestellt, wie beim VU-Instrument beschrieben.

- Nennpegel an AUX 4/1 (linker Kanal), kein Pegel an AUX 4/2.
- Mit Trimmer CH 4/1 auf -3dB-Anzeige einstellen.
- Nennpegel an AUX 4/2 (rechter Kanal), kein Pegel an AUX 4/1.
- Mit Trimmer CH 4/1 auf -3dB-Anzeige einstellen.

4.5 Testgenerator

1.913.150

Oszillator:

Auf dem Testgenerator die Taste OSCILLATOR drücken und die Frequenz auf 1kHz einstellen.

■ Voltmeter an symmetrischen Generatorausgang anschliessen: P1-1 / P1-3.

■ Mit R49 Nennpegel einstellen.

Klirrabgleich

Frequenz auf 30Hz einstellen.

■ Mit R59 Klirr auf -62dB (0,08%) abgleichen.

Kennton:

■ Taste IDENT drücken.

■ Mit R52 Nennpegel einstellen.

Weisses Rauschen:

■ Taste WHITE NOISE drücken.

■ Mit R67 Nennpegel einstellen.

Rosa Rauschen:

■ Taste PINK NOISE drücken.

Mit R73 Nennpegel einstellen.

Das Springen des Instrumenten-Zeigers bei den Rauschsignalen ist schaltungsbedingt und somit normal.

Generatoreingang:

■ Auf Kanal 1 Eingang GEN wählen.

■ Voltmeter ohne Last an PF-Insert anschliessen.

■ Mit R89 auf Insertpegel (vgl. 1.6) einstellen.

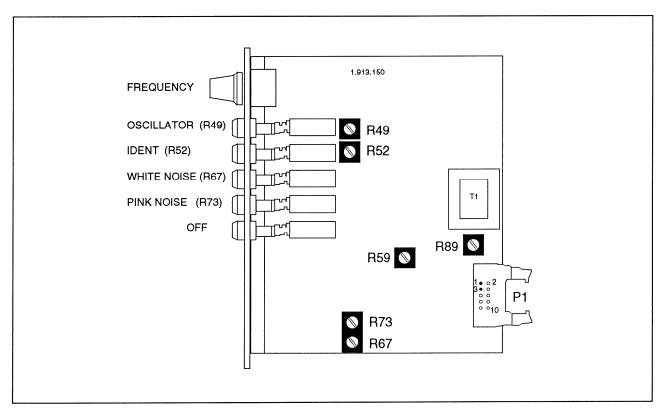


Fig. 24 Abgleichelemente des Testgenerators 1.913.150.

SECTION 3: Alignment Instruction

CO	NTENTS	page	
1.	Gener	al	1
	1.1	Level definition	1
	1.2	Conversion table for voltage levels: vo	
	1,3	Requirement for calibration	
	1.4	Required tools and utensils	
	1.5	Electrostatically Sensitive Elements	
	1.6	Calibration requirements	
	1.7	Measuring setup	
	1.8	Demagnetizing the Microphone Input	
2.	Units	of the fader panel	8
	2.1	Mono/stereo fader unit	1.911.110122 8
	2.2	Master fader Mk II	1.911.315335 9
3.	Units	of the input panel	10
	3.1	Input units mono "A"	1.912.220226 10
	3.2	Inpuit units stereo high level "A"	1.912.240243 12
	3.3	Input units stereo universal "A"	
	3.4	Input units mono "B"	1.912.120/122 14
	3.5	Input units stereo high level "B"	1.912.141145 15
	3.6	Auxiliary master unit	1.912.31016
	3.7	Control Room Monitor	1.912.42017
	3.8	Studio Monitor and Talk Back unit	1.912.32018
4.	Main I	nstruments	21
	4.1	VU-Meter	1.913.230/231 21
	4.2	Peak Program Meter (PPM)	1.913.220/221 21
	4.3	Correlator 1.913.210/211	22
	4.4	ALIV Indicator	1.010.100

1. General

1.1 Level definition

Level specifications:

The specifications of nominal levels in dBu are based on a fixed voltage as the reference value:

0 dBu ≘ 0,775 V_{eff.}

The reference value of 0.775 V for the relative voltage level in dBu has been derived from the value definition of the absolute voltage level in dBm, however without regard to the definition $(600\Omega/1\text{mW})$.

Nominal level in dBu:

The nominal level corresponds to the studio level at peak level recording. The terms line level and studio level are used synonymously.

The typical nominal levels are:: $+6dBu \triangleq 1,55V_{eff.}$ $+10dBu \triangleq 2,45V_{eff.}$ $+15dBu \triangleq 4,36V_{eff.}$

Output level:

0 dB PPM = Nominal level 0 VU = Nominal level minus 6 dB*

6dB correspond to the widely used value for the VU instrument lead.

PPM consoles

Peak program meters as quasi-peak reading instruments indicate 0 dB at nominal level.

VU consoles

VU-instruments indicate the level of a test signal plus the lead of the instrument. Therefore the test signal must be nominal level minus lead for a 0VU indication.

Gain/attenuation:

The relative level specifications in dB provide information on the degree of amplification/attenuation of an active (e.g. amplifier) or passive (e.g. potentiometer) attenuation provided by an element with in a circuit.

The following table translates the voltage ratios (output ÷ input) into decibel values (rounded factors):

	dB	0	1	2	3	6	10	14	20	26	34	40
Factor	Gain	1	1,1	1,2	1,4	2	3,2	5	10	20	50	100
ractor	Attenuation	1	0,9	0,8	0,7	0,5	0,3	0,2	0,1	0,05	0,02	0,01

1.2 Conversion table for voltage levels: volt ↔ dBu

U ₁	μ۷ —		************	dBu	U ₁	μ۷ —			dBu
<u>U</u> 2	mV — V —	dBu	—dBu		<u>U</u> 2	mV — V —	dBu	dBu	
1	0,775	±0	-60	-120	31,6	24,5	+30	-30	-90
1,12	0,87	+1	-59	-119	35,5	27,5	+31	-29	-89
1,26	0,98	+2	-58	-118	39,8	30,8	+32	-28	-88
1,41	1,09	+3	-57	-117	44,7	34,6	+33	-27	-87
1,59	1,23	+4	-56	-116	50,1	38,8	+34	-26	-86
1,78	1,38	+5	-55	-115	56,2	43,6	+35	-25	-85
2,00	1,55	+6	-54	-114	63,1	48,9	+36	-24	-84
2,24	1,73	+7	-53	-113	70,8	54,8	+37	-23	-83
2,51	1,95	+8	-52	-112	79,4	61,5	+38	-22	-82
2,82	2,18	+9	-51	-111	89,1	69,0	+39	-21	-81
3,16	2,45	+10	-50	-110	100	77,5	+40	-20	-80
3,55	2,75	+11	-49	-109	112	86,9	+41	-19	- 79
3,98	3,08	+12	-48	-108	126	97,5	+42	-18	– 78
4,47	3,46	+13	-47	-107	141	109,4	+43	-17	-77
5,01	3,88	+14	-46	-106	159	122,8	+44	-16	–76
5,62	4,36	+15	– 45	-105	178	137,7	+45	-15	- 75
6,31	4,89	+16	-44	-104	200	154,5	+46	-14	-74
7,08	5,48	+17	-43	-103	224	173,4	+47	-13	–73
7,94	6,15	+18	-42	-102	251	194,6	+48	-12	-72
8,91	6,90	+19	-41	-101	282	218,3	+49	-11	- 71
10,0	7,75	+20	-40	-100	316	244,9	+50	-10	- 70
11,2	8,69	+21	-39	-99	355	274,8	+51	- 9	-69
12,6	9,75	+22	-38	-98	398	308,4	+52	-8	-68
14,1	10,9	+23	-37	-97	447	346,0	+53	- 7	-67
15,8	12,3	+24	-36	-96	501	388,2	+54	-6	-66
17,8	13,8	+25	-35	-95	562	435,6	+55	-5	-65
20,0	15,5	+26	-34	-94	631	488,7	+56	-4	-64
22,4	17,3	+27	-33	-93	708	548,4	+57	-3	-63
25,1	19,5	+28	-32	-92	794	615,3	+58	-2	-62
28,2	21,8	+29	-31	-91	891	690,4	+59	_1	–61
31,6	24,5	+30	-30	-90	1000	774,6	+60	±0	-60

The column with the bold figures contains voltage values. The next three columns give the corresponding decibel values when interpreting the voltages as Volt, millivolt, or microvolt. The first column specifies the voltage ratios that correspond to the dBu values relative to Volt.

This table is based on the definition 0 dBu ≘ 0.775V_{eff.}

1,3 Requirement for calibration

Each mixing console that leaves the factory is shipped with a test report that contains the data of the final inspection such as:

- Alignment to the nominal level specified by the customer
- Frequency response, distortion, signal-to-noise ratio, noise voltage and channel separation.

Recalibration of the mixing console is required when the operating parameters (nominal level) change or after modifications to the mixing consoles have been made. The only scheduled maintenance required is the demagnetization of the input transformers (see 1.8).

Note:

Factory supplied (exchange) modules are prealigned to a nominal level of +6 dBu and can be installed directly into the mixing console.

1.4 Required tools and utensils

- Audio frequency generator 1 kHz sin./Rs ≤ 200Ω
- AF voltmeter, Rz in \geq 10 k Ω
- 2-channel CRO
- Alignment screwdriver, size 2
- Bus adapter for connecting unplugged modules to the bus. At least the following are required:

1 Adapter with 32-pin connector Part No. 1.228.322.81 2 Adapter with 64-pin connector Part No. (1 pce.) 1.228.327.81

- 2 Extractors for the modules
 Part No. (1 pcs) 1.912.000.06
- Firm, non-conductive support (rubber or cardboard), as a base for the modules that have been removed and connected to the bus via the adapter. (these should preferably be placed on the control panel of the audio console) Size approx. 400 x 250 mm

1.5 Electrostatically Sensitive Elements "ESE"



Static electricity

In our daily activities numerous materials may be a possible source of static electricity. If certain circumstances are given, a person and the various things that are being handled may build up considerable static charges. When it comes to a discharge of such a static potential, very high peak power pulses may result. Even a small portion of such energy, when finding its way into an electronic component, will result in damage or even destruction of that component.

Handling of ESEassemblies

It must be our aim, therefore, to protect our products from damages and fault conditions that may be the result of electrostatic discharges. Correct handling of electronic assemblies when performing service work on equipment is of utmost importance. For this the following safe handling procedures have to be observed:

- 1. Discharge your body by touching earth before picking up an electronic assembly.
- 2. Touch your partner first (handshake) before handing an assembly to him.
- 3. When handling complete PC-boards, make it your standard practice to hold them only at their edge or at their front panel.
- Never touch the conductive tracks, terminal points or components on a circuit board without having first discharged yourself.
- Switch off the electric current supply to the equipment before removing or inserting an ESE assembly.
- Always use ESE packaging for transportation or storage of ESE assemblies.
- 7. Make sure to use only tools that are approved for ESE work.
- 8. An earthed wrist-band is to be carried whenever performing any work on or with electronic assemblies, irrespective of whether they contain ESE or not.
- 9. Keep Styropor, PVC folis, plastic bags, etc. far away from ESE assemblies.

ESE-kit

This kit consists of an earthed protective base (60 \times 70cm) with earthed wrist-band for any work with electronic assemblies.

Part No. **20.020.001.44**

1.6 Calibration requirements

Temperature:

The mixing console should be calibrated when it has attained the normal operating temperature (approx. 15 minutes after power on)

Load:

- The insert points (INSERTs), monitor, prefader listening (PFL) and talk-back (TB) outputs should not be loaded (RL \geq 10 k Ω)
- The line outputs (Group, master, aux master) should be terminated with a 600Ω load.

Test signal:

Sine-wave signal / 1 kHz

Level reference:

All specifications in this calibration instruction relate to a nominal level of +6dBu.

If other nominal levels are used, the values according to the following table are applicable:

Overview:

Nominal level	Insert balanced	Insert unbalanced	Line (outputs	VU Indication (6dB lead)	0dB Indication (PPM)
+6dBu	+6dBu	0dBu	+6dBu	0dBu	+6dBu
+10dBu	+10dBu	+4dBu	+10dBu	+4dBu	+10dBu
+15dBu	+15dBu	+9dBu	+15dBu	+9dBu	+15dBu

Insert level:

Balanced insert points are at nominal level whereas unbalanced versions carry a level that is 6 dB lower.

E3/4

1.7 Measuring setup

Removing and monting the assemblies:

Remove the unit to be calibrated and connect it to the audio console with the bus adapter cable.

The zero-ohm-bus amplifiers are sensitive to the peak voltages that may occur when plugging in assemblies to the powered console. For this reason the following units must never be removed or plugged in unless the audio console is switched off:

VCA fader; master fader; group fader; AUX master; studio monitor; CR monitor.

Balanced Instruments:

AF voltmeter and AF generator must be equipped with balanced inputs and outputs.

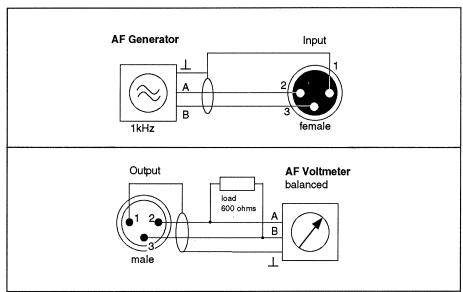


Fig. 1 Connection of the AF generator with balanced line. The measurements with the audio voltmeter are performed with or without loading the output, depending on the test point

Unbalanced instruments:

Unbalanced instruments are to be connected via a line balance transformer. If this is not feasible, the following wiring can be used as an expedient:

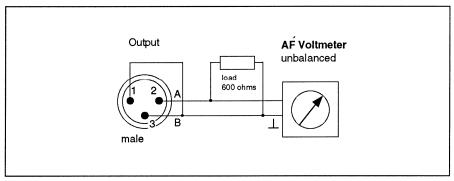


Fig. 2

The **b**-line (3) connected to the audio ground (1) together with the **a**-line (2) constitutes an unbalanced test point. However, this circuit arrangement cannot be used for high output levels (clipping effect on electronically balanced outputs, e.g. INSERT).

Measurements on insert points:

The switch contacts of the jack sockets interrupt the signal flow through the channel as soon as a jack is inserted. However, when measurements are taken on INSERT points, the signal path should not be interrupted. For this reason the following should be noted:

- Unbalanced inserts must be through-connected (SEND → RETURN).
- Balanced inserts can be measured on the insert SEND socket. The signal is only interrupted when the RETURN socket is used.

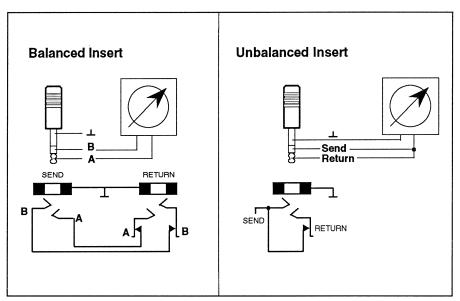


Fig. 3 Measurement on balanced and unbalanced inserts. The signal flow should not be interrupted.

1.8 Demagnetizing the Microphone Input Transformers

Inadmissible connection of unbalanced input sources or unintentional ground connection of the a/b audio (leads of microphone inputs to a connected phantom supply drive the input transformers into saturation and cause permanent magnetization (remanence).

This detrimental effect is manifested through so-called microphonic noise: (light metallic vibrations of the mixing console, e.g. tapping against plug-in modules, produce audible modulations via the speakers, even if the microphone inputs are not connected.

The residual magnetism in the transformers can also accumulate over extended operating times.

We therefore recommend to demagnetize all microphone inputs periodically and before calibration work:

Procedure:

- Switch audio console off (to protect the connected speakers).
- Connect audio generator to the microphone input.
 The generator should supply a signal without DC content in order to prevent unwanted magnetization of the transformer.

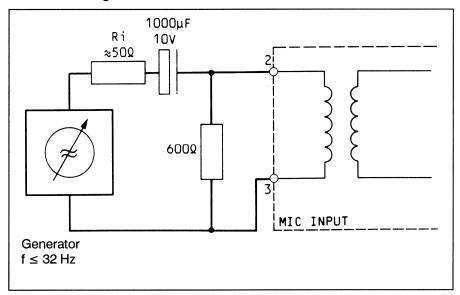


Fig. 4 Connection of the AF-generator to microphone inputs.

- Capacitor C=1000µF/10V blocks the DC components.
- Resistor R600Ω removes DC components from the capacitors.
- Slowly increase generator level (frequency ≤32Hz) from 0V to 3V.
- Slowly decrease supply level to 0V.

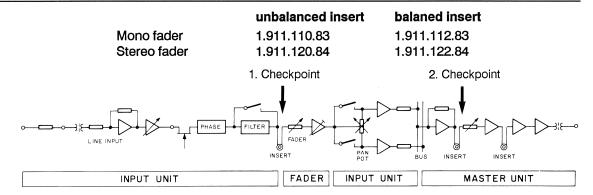
2. Units of the fader panel

Remove the unit for calibration and connect it to the audio console with the bus adapter cable.

All filters, EQ, balance and panorama potentiometers have to be switched off during calibration.

2.1 Mono/stereo fader unit

1.911.110/112/120/122



- Feed test signal at nominal level to the input unit.
- Connect the AC voltmeter to the PF insert. (test point 1)
- Set the potentiometer LINE GAIN of the input unit to middle position and switch off the equalizer. If you cannot measure a PF insert level as listed below, the input unit has to be calibrated.
 - a) Unbalanced insert: 0dBu
 - b) Balanced insert: +6dBu
- Position the fader at **0dB**.
- Select a master on the input unit, switch off the panorama potentiometer and connect the DC voltmeter to the PF insert of this master. (corresponds to the output level of the input fader; test point 2)
- Align the level with the trimmers R23 of the mono fader or R109 –left– and R209 –right– of the stereo fader:
 - a) For unbalanced master inserts: 0dBu
 - b) For balanced master inserts: +6dBu

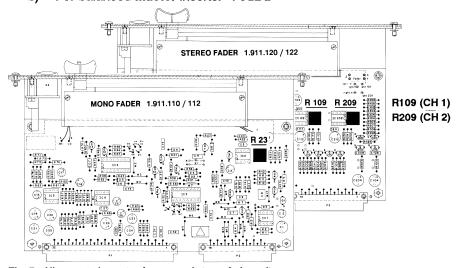


Fig. 5 Alignment elements of mono and stereo fader units.

2.2 Master fader Mk II

1.911.315/325/335

	without limiter	with limiter
Mono master unit Mk II	1.911.315	1.911.317
Stereo master unit Mk II	1.911.325	1.911.335

The corresponding circuit boards are numbered as 1.911.323 (mono) and 1.911.323/324 (stereo).

AF insert level:

- Feed test signal at nominal level to a calibrated input and rout it to the master.
- Connect the voltmeter to the AF INSERT OUT of this master fader.
- Set the input fader and the master fader to 0dB.
- Calibrate the AF INSERT OUT with R142 for CH1 (or R342 for CH2) to the corresponding insert level. (see 1.6)

Master output level:

- Feed same test signal as described above and set the input fader and the master fader to 0dB.
- Connect the AF voltmeter to the master output and adjust it to **nominal level** with R152 for CH 1 or R352 for CH 2.
- Subsequently select next master on the input unit and repeat foregoing procedure with that unit. Align all master faders in the same manner.

Distortion alignment:

No distortion alignment is necessary because the output stage compensates distortion.

Notes:

- The components of the 1st channel (PCB No. 1.911.323) are assigned the position numbers 100 to 299, those of the second channel the numbers 300 to 499 (PCB No. 1.911.324).
- The two channels of the stereo version are identical and completely separated. However, these two boards are mirror symmetrical.

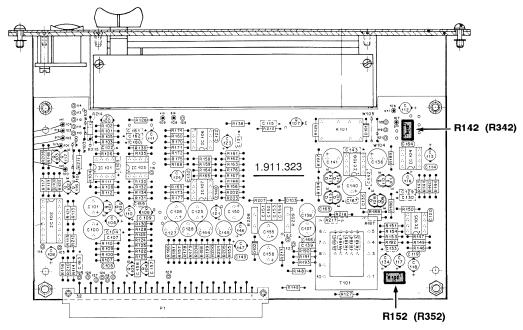


Fig. 6: Alignment elements of the master unit Mkll.

Channel 1: $(\Sigma 1, 3, 5...)$ R142: AF insert OUT R152: Master output level Channel 2: $(\Sigma 2, 4, 6...)$ R342: AF insert OUT R352: Master output level

Units of the input panel

Use the suitable bus adapter cables for connecting P3, P4 and P6 of the removed unit to the audio console. Switch off all non-linear functions as filters, EQ, phase and limiters.

3.1 Input units mono "A"

1.912.220...226

- Connect AF voltmeter to the PF insert. (For a correct connection to the insert socket see 1.7 "measuring setup")
- Switch off both filters.
- Switch off the equalizer.

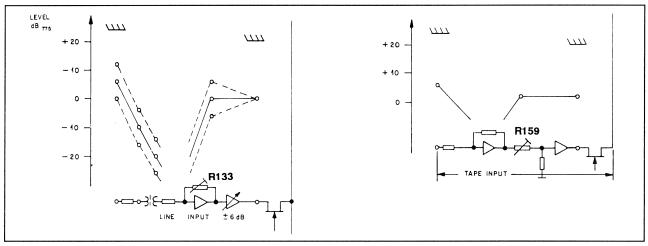


Fig. 7 Block diagram

Line input:

- Feed the test signal at nominal level to the line input.
- Set the correction potentiometer LINE GAIN to the self-locking CAL position.
- Adjust level with R133 to 0dBu. (balanced insert levels see 1.6)

Tape input:

- Feed the test signal at nominal level to the tape input.
- Adjust level with R159 to 0dBu. (balanced insert levels see 1.6)

Common mode rejection:

The electronically balanced tape input needs adjustment of the common mode rejection. Feed the test signal to the a- and b-line of the input as depicted in fig.8.

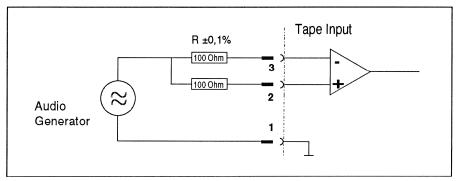


Fig. 8 Feeding the test signal for the adjustment of common mode rejection.

E3/10

■ Minimize the level at the inputs PF insert with R153. (common mode rejection at $1 \text{kHz}/+6 \text{dBu} \ge 80 \text{dB}$ i.e. values in the μV range).

Microphone input:

No calibration is needed for the microphone input other than demagnetizing the input transformers. (see 1.8)

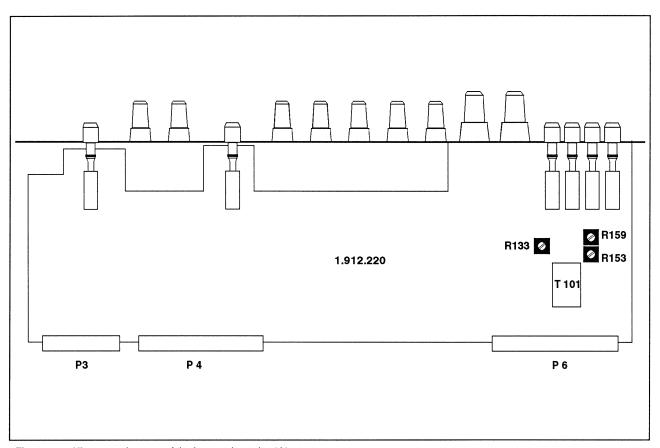


Fig. 9 Alignment elements of the input unit version "A"

3.2 Inpuit units stereo high level "A"

1.912.240...243

Both line inputs 1 and 2 share the same input stage. The calibration of one input is sufficient.

- Set the GAIN potentiometer to the self-locking center position.
- Switch off the STEREO SPREAD, EQUALIZER and the MONO key.
- Press the input selector key LINE 1.

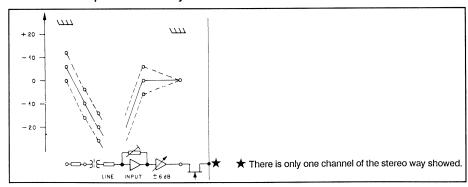


Fig. 10 Block diagram

Line input left:

- Feed test signal at nominal level to the input LINE 1, left.
- Connect voltmeter to the **PF insert left** (patch or P3–15).
- Adjust the left channel with R114 to 0dBu. (balanced insert levels see 1.6)

Line input right:

- Feed test signal at nominal level to the input LINE 1, right.
- Connect voltmeter to the PF insert right (patch or P3-13).
- Adjust the right channel with R214 to 0dBu. (balanced insert levels see 1.6)

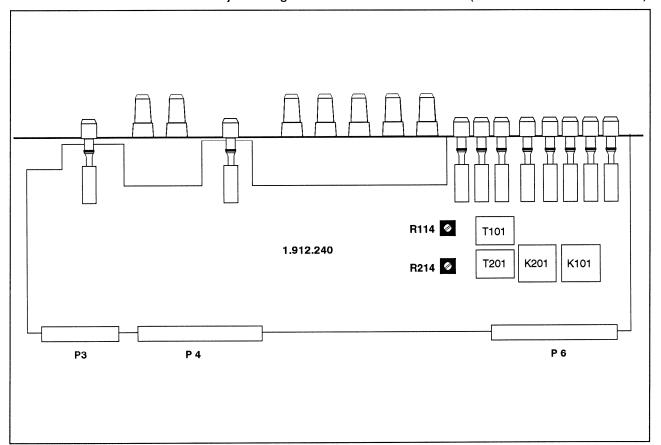


Fig. 11 Alignment elements of the input unit stereo high level version "A".

E3/12

3.3 Input units stereo universal "A"

1.912.250...253

■ Switch off FILTER, EQUALIZER and STEREO SPREAD.

Line input:

- Set the LINE GAIN potentiometer to the self-locking center position.
- Select the LINE input.

left channel

- Feed test signal at nominal level to the LINE input, left channel.
- Connect voltmeter to the PF insert left (patch or P3-15).
- Adjust the left channel with R125 to 0dBu. (balanced insert levels see 1.6)

right channel

- Feed test signal at nominal level to the LINE input, right channel.
- Connect voltmeter to the PF insert right (patch or P3-13).
- Adjust the right channel with R325 to 0dBu. (balanced insert levels see 1.6)

Microphone input:

No adjustment is needed for the microphone input other than demagnetizing the input transformers. (see 1.8)

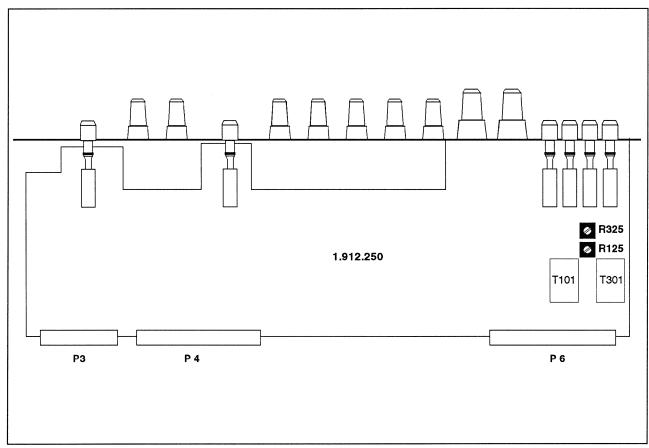


Fig. 12 Trimmer potentiometers for the calibration of the LINE input.

3.4 Input units mono "B"

1.912.120/122

Switch off EQUALIZER and FILTER.

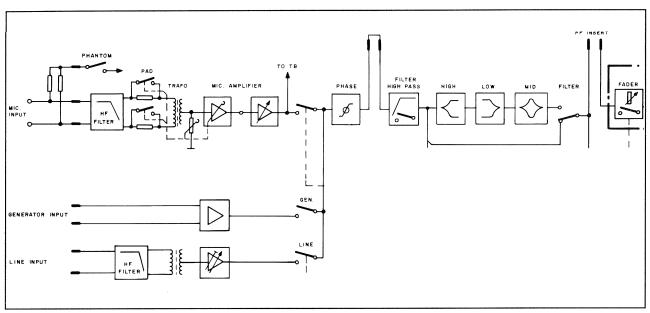


Fig. 13 Block diagram

Line input:

- Feed test signal at nominal level to the LINE input.
- Set the potentiometer LINE GAIN to the self-locking CAL position.
- Connect voltmeter to the **PF insert** (patch or P6–27).
- Adjust the level with R35 to 0dBu. (balanced insert levels see 1.6)

Other inputs:

The input stages for microphone and audio generator don't need calibration.

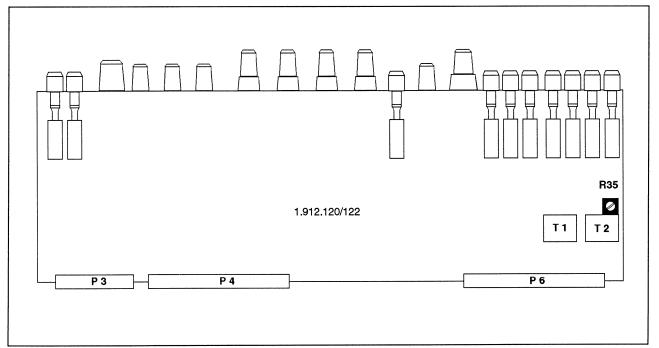


Fig. 14 Alignment elements for the mono input units version "B".

E3/14 EDITION: 27. September 1991

3.5 Input units stereo high level "B"

1.912.141...145

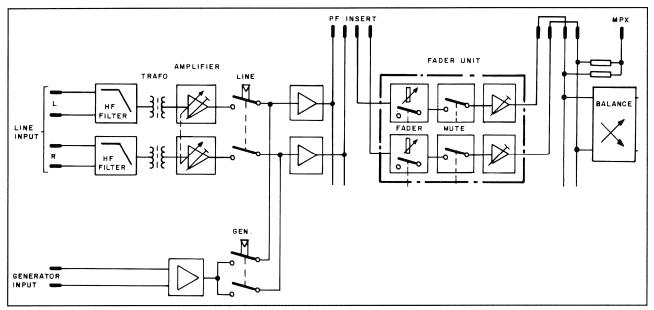


Fig. 15 Block diagram

Line input:

Set the LINE GAIN potentiometer to the self-locking center position.

left channel

- Feed test signal at nominal level to the LINE input left channel.
- Connect voltmeter to the PF insert left (patch or P3-15).
- Adjust the left channel with R109 to 0dBu. (balanced insert levels see 1.6)

right channel

- Feed test signal at nominal level to the LINE input right channel.
- Connect voltmeter to the PF insert right (patch or P3-13).
- Adjust the right channel with R209 to 0dBu. (balanced insert levels see 1.6)

Generator:

The input stage for the audio generator doesn't need any calibration.

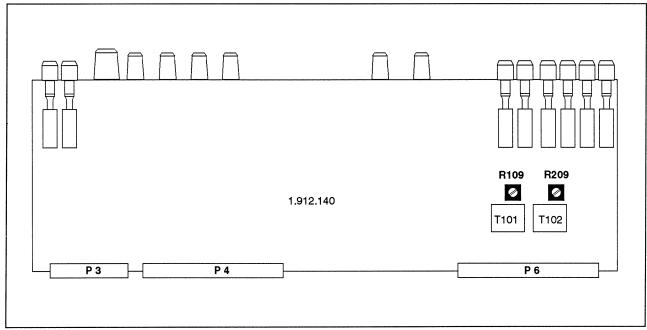


Fig. 16 Alignment elements of the stereo input units version "B".

3.6 Auxiliary master unit

1.912.310

AUX output level:

The output levels of the AUX masters at maximum gain in the AUX path are aligned to 10dB above nominal level.

- Feed test signal at nominal level to LINE input 1 and set the input fader to 0dB.
- Completely open the AUX potentiometers 1...4 of the input in the PF position by turning it fully clockwise. ♥
- Completely open also the potentiometers **AUX SEND 1...4** of the AUX master unit by turning them fully clockwise. ♥

AUX 1...3

- Connect the voltmeter to the corresponding AUX output.
- With a jumper (0dB/-10dB) and a trimmer align the level to 10dB above the nominal level. The alignment controls for the corresponding AUX path are shown in the table below.

AUX 4

- Perform the alignment as described above.
- Turn the AUX balance potentiometer (input unit) to the extreme **left** position and adjust the output AUX 4L with **R425** to 10dB above nominal level.
- Turn the AUX balance potentiometer (input unit) to the extreme **right** position
 ② and adjust the output AUX 4R with **R525** to 10dB above nominal level.

Distortion alignment:

This alignment is only necessary after an output stage has been repaired.

- Connect the voltmeter to AUX output.
- Switch the 30Hz sine wave signal from the audio generator to the AUX master to be calibrated.
- Increase the output level to +24dBu and subsequently align to minimal distortion with the aid of the trimmer potentiometers listed below.

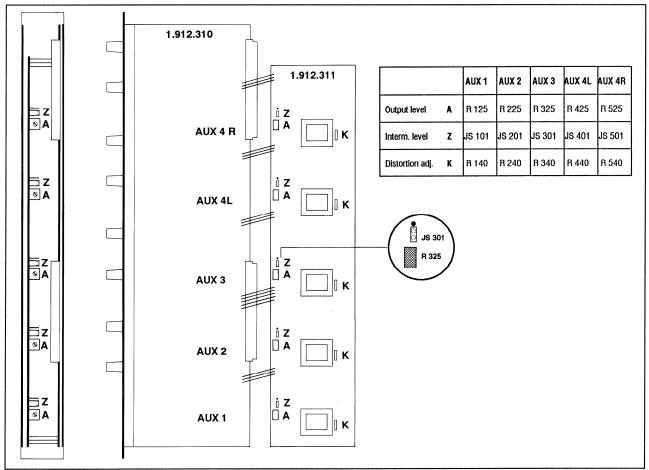


Fig. 17 Location of trimmer potentiometers on the AUX master unit.

3.7 Control Room Monitor

1.912.420

To start the alignment no key on the CR monitor unit must be pressed.

- Feed test signal at **nominal level** to the input EXTERNAL 1 left or right.
- Select the input EXT 1 on the CR monitor.
- Completely open the potentiometer MONITOR VOLUME by turning it clockwise. ♥
- Make sure that the BALANCE is switched off (BALANCE IN key).

Headphones level:

- Connect voltmeter with no load to one of the 6.3mm headphone sockets: tip = left channel / ring = right channel / sleave = 0V
- Adjust level with R7 left and R64 right to +20dBu (7,75V).

CR monitor:

- Connect voltmeter with no load to the CR MONITOR output left or right
- Adjust the output level with R30 left and R82 right to +16dBu.

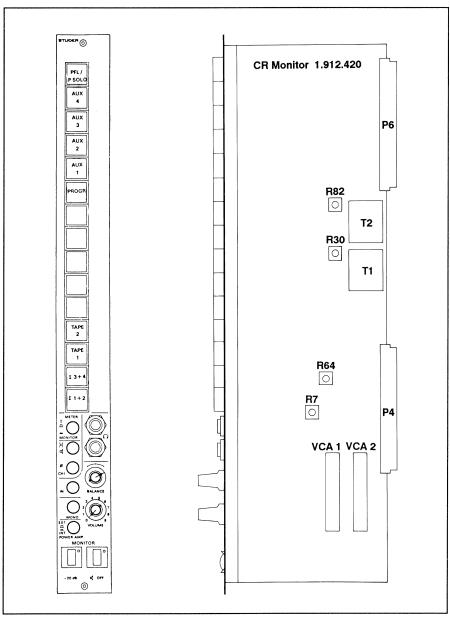


Fig. 18 Alignment elements of the CR Monitor unit. 1.912.420.

EDITION: 27. September 1991

3.8 Studio Monitor and Talk Back unit

1.912.320

The contol room monitor unit must be calibrated before the alignment of the studio monitor.

PFL level:

- Feed test signal at nominal level to the LINE input (gain: CAL) of the input unit.
- Press PFL key on this input unit.
- Completely open the potentiometer MONITOR VOLUME of the CR Monitor unit by turning it completely clockwise.

 C
- Press PFL/P.SOLO to MONITOR key on the Studio Monitor unit. The potentiometer PFL/P.SOLO has no influence on the signal level of the CR MONITOR output.

PFL/P.SOLO monitor:

- Connect the voltmeter with no load to the CR MONITOR output.
- Adjust with R67 left and with R70 right to +16dBu.

PFL/P.SOLO headphones:

- Completely open the PFL/P.SOLO potentiometer .
- Connect voltmeter with no load to the headphones socket PFL/P.SOLO.
 tip = left channel / ring = right channel / sleave = 0V
- Adjust with R79 left and with R87 right to +20dBu.

Notes:

- The Studio Monitor is muted as soon as a microphone is on. In this case the CUT LED is light. Muting can be released with the RE-IN key.
- The TB STUDIO and TB SPEAKER keys attenuate the studio output level for 20dB and must therefore not be activated.

Studio Monitor:

- Feed test signal at **nominal level** to one of the monitor inputs EXTERNAL and press the corresponding source selector key.
- Completely open the STUDIO potentiometer. C
- Connect voltmeter with no load to the STUDIO output left or right.
- Adjust with R11 left and with R32 right to +16dBu.

Headphones studio:

- This adjustment affects the level of the studio monitor signal going out to the studio headphones. (e.g. connected to TB box)
- Feed test signal as described for the studio monitor alignment.
- Connect voltmeter with no load to the output TB box (D-type) or to the headphones socket on the TB box (open VOLUME completely).
 tip = left channel / ring = right channel / sleave = 0V
- Adjust with R7 left and R28 right to +20dBu.

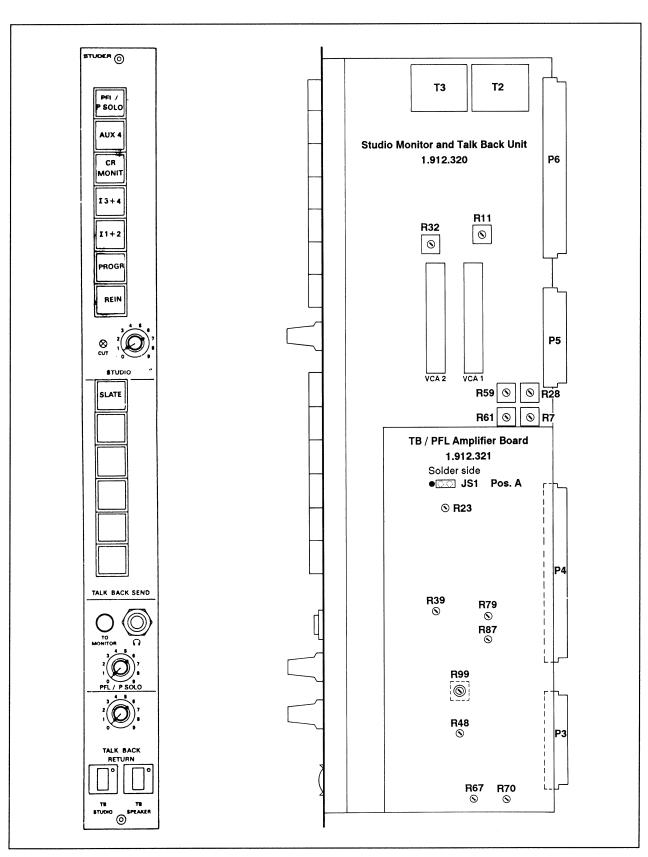


Fig. 19 Alignment elements of the Studio Monitor and Talk Back unit 1.912.320.

Talk Back level:

The level of the TB microphone is adjustable with three different trimmer potentiometers: input gain, level for feeding to studio monitor and to studio headphones separately.

■ Feed test signal at **-60dBu** to the microphone socket on the audio console (goose neck). Balanced connection to pin 1 and 3 of the DIN-connector.



TB microphon (control room)

- Press the TB SEND A key.
- Connect voltmeter with no load to the output TB EXTERNAL 1.
- Adjust the limiter threshold level for the TB signal with R99 to +6dBu. This trimmer potentiometer is accessible through a hole in the PCB 1.912.321. (The jumper JS1 (on 1.912.321) should be set to position A.)

TB to Studio Monitor

- Press the TB STUDIO key.
- Connect voltmeter with no load to the left channel of the STUDIO output.
- Adjust with R59 to +6dBu.* (R59 affects both channels)
 - * = factory setting. The level depends on the desired talk back volume.

TB to Studio headphones

- Connect voltmeter with no load to TB box output (D-type) or to the headphones socket of the TB box (open VOLUME completely). tip = left channel / ring = right channel / sleave = 0V
- Adjust with **R61** to +6dBu* (R61 affects both channels.)
 - * = factory setting. The level depends on the desired talk back volume.

TB return

- Feed test signal with +6dBu to the TB RETURN input.
- In normal operation the TB signalization switches the signal to the PFL/TB speaker. For this reason an external TB key has to be pressed.

 (The internal signal 'E' opens the TB RET signal path. Circuit diagram 1.912.320; page 2)
- Completely open the TB RETURN potentiometer C.
- Adjust TB RETURN INPUT with R48 to the desired maximum volume.

Attenuation TB return

To avoid feedback in the control room the TB return signal is attenuated as soon as a TB key in the control room is pressed.

The attenuation is adjustable with R39.

- Feed test signal at **-60dBu** to the speaker microphone socket. (D-type)
- Press any TB key on the audio console. This activates the attenuation of the TB return signal. Adjust it with R39 to the desired value. factory setting: -20dB.

(The internal signal 'D' attenuates the TB RET signal. Circuit diagram 1.912.320; page 2)

Speaker TB microphone

- Use same measuring setup as described above.
- Activate the signalization as described for the TB return signal.
- Completely open the TB RETURN potentiometer *C*.
- Adjust tthe SPEAKER MIC level with R23 to the desired maximum volume.

4. Main Instruments

4.1 VU-Meter 1.913.230/231

- Adjust the output level to 6 dB below line level on the master output.
- Adjust with R4 (Fig. 21) to a VU-meter reading of 0 VU.
- This gives the necessary lead of 6 dB.

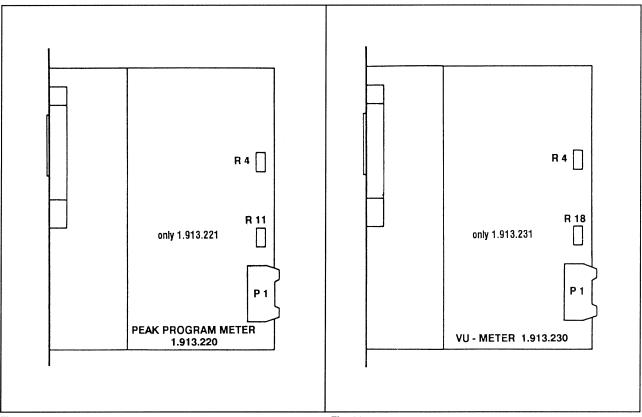


Fig. 20 Fig. 21

4.2 Peak Program Meter (PPM) 1.913.220/221

- Adjust master output to line level.
- Adjust with R4 (Fig. 20) to a needle indication of 0 dB.

EDITION: 27. September 1991

4.3 Correlator 1.913.210/211

- Adjust line level at master output 1 and 2.
- Adjust with R4 (Fig. 22) and R13 to -18 dBu or 100 mVAC measured at testpoint 1 (TP1) and testpoint 2 (TP2).
- Output signal in phase at master 1 and 2 (correlate).
- Adjust with R26 to a meter indication of + 1.

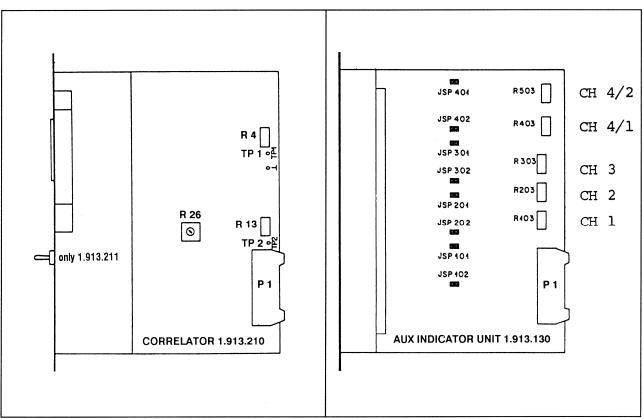


Fig. 23

4.4 AUX Indicator

1.913.130

This unit contains the four instruments of auxiliary outputs. The indication characteristic may be adapted to the main instruments. It is possible to choose between PPM or VU with jumpers. The jumper switches are named JSP (Fig.23).

VU display:

For this type of dynamic characteristic the jumpers must be set as follows:

JSP 102 → Instrument AUX 1 JSP 202 → Instrument AUX 2 JSP 302 → Instrument AUX 3 JSP 402 → Instrument AUX 4

VU meter

Adjustment for peak-level +10dBu / +12dBu.

For these two peak levels the nominal level for a reading of 0VU is +4dBu.

The socalled lead is, therefore, 6dB or 8dB respectively.

AUX 1...3 (VU)

Apply the test signal with **+4dBu** to the input of the instrument to be calibrated. Adjust for a reading of **0VU** with trimmer potentiometers **R103**, **R203** or **R303** (see fig. 23).

AUX 4 (VU)

The AUX 4 instrument displays the mono level of the AUX 4 stereo path. Each channel of AUX 4 has to be adjusted to –3VU which results in 0VU reading for both channels together.

- Feed +4dBu to AUX 4/1 (left channel), no signal to AUX 4/2.
- Adjust the instrument with trimmer R403 (see fig. 23) to -3VU.
- Feed +4dBu to AUX 4/2 (right channel), no signal to AUX 4/1.
- Adjust the instrument with trimmer R503 (see fig. 23) to -3VU.

PPM display:

The characteristic of a Peak Program Meter can be obtained by the following jumper setting:

JSP 101 → Instrument AUX 1 JSP 201 → Instrument AUX 2 JSP 301 → Instrument AUX 3 JSP 401 → Instrument AUX 4

AUX 1...3 (PPM)

Apply the test signal with **line level** to the input of the instrument to be calibrated. Adjust for a reading of **0dB** with trimmer potentiometers **R103**, **R203** or **R303** (see fig. 23).

AUX 4 (PPM)

The AUX 4 instrument is aligned in a similar way as described for the VU characteristic.

- Feed line level to AUX 4/1 (left channel), no signal to AUX 4/2.
- Adjust the instrument with trimmer R403 (see fig. 23) to -3dB.
- Feed line level to AUX 4/2 (right channel), no signal to AUX 4/1.
- Adjust the instrument with trimmer R503 (see fig. 23) to -3dB.

EDITION: 2. Oktober 1993

4.5 Audio Generator

1.913.150

Oscillator:

■ Press the OSCILLATOR key on the audio generator and set the frequency to

■ Connect the voltmeter to the balanced output of the audio generator: P1-1 / P1-3.

Adjust to line level with the trimmer potentiometer R49.

Harmonic distortions

Set the frequency to 30Hz.

Adjust the distortions with R59 to -62dB (0,08%).

Identification:

Press the IDENT key.

Adjust to line level with R52.

White noise:

Press the WHITE NOISE key.Adjust to line level with R67.

Pink noise:

■ Press the PINK NOISE key.

Adjust to line level with R73.

The irregular deflection of the VU meter instrument with noise signals is due to the circuit layout.

Audio generator input:

■ Select the input **GEN** on channel 1.

■ Connect the voltmeter without load to the PF insert of channel 1.

Adjust with R89 to the insert level of your console (see 1.6).

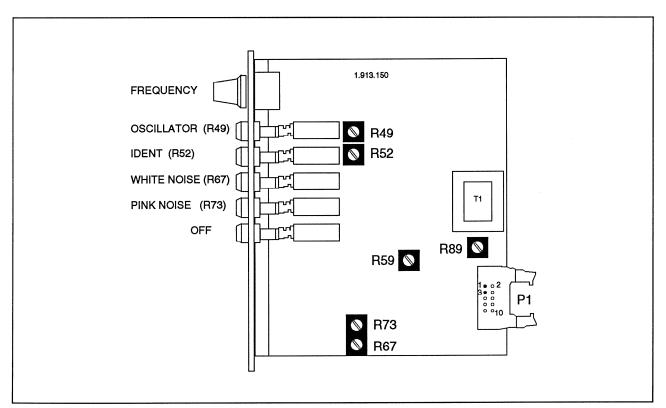


Fig. 24 Trimmer potentiometers for the calibration of the audio generator 1.913.150.

E3/24

KAPITEL 4:	Einschub-Module der Fadersektion 1.911.	***
	N. W. A. T.	
	INHALT	
	1. Flachbahnregeler Mono / Stereo1.911.110	.122
	2. Master Unit MkII	.335
	3.* VCA-Fader Units1.911.210 1.911.	
SECTION 4:	Plug-in Units of the fader section 1.911.	•••
	CONTENTS	
	1. Mono / stereo fader 1.911.110	.122
	2. Master unit MkII1.911.315	.335
	3.* VCA fader units1.911.210 1.911.	

- Diese Beschreibungen werden kundenspezifisch bestückt.
- * These descriptions are supplied according to the customers requirements.

Flachbahnregler Mono/Stereo, mit /ohne symmetrischen Insert

INHALT		Seite
1.	Bedienungselemente	2
2.	Symmetrierverstärker	2
3.	Technische Daten der Baugruppe	3
5.	Schemateil	5

GELTUNGSBEREICH

Die vorliegenden Informationen gelten für folgende Baugruppen:

	<u>Insert unsym.</u>	insert symmetrisch
Mono-Fader "A"	1.911.110.83	1.911.112.83
Stereo-Fader "A"	1.911.120.84	1.911.122.84

EDITION: 27. August 1991 D/1

1. Bedienungselemente

Regler

Flachbahnregler mit Conductiv-Plastic-Bahn. Für den Faderstart ist in der Kontaktbahn ein Faderendkontakt eingebaut, der vom Abtaster geschlossen wird. Diese Bauart kommt ohne Mikroschalter und Schaltpunkteinstellung aus (s. unten).

Zur Erhaltung einer einwandfreien mechanischen und elektrischen Funktion ist der Flachbahnregler bei Bedarf zu reinigen und zu ölen. Eine ausführliche Anleitung sowie alle notwendigen Utensilien sind als 'Studer Fader Pflege Kit' unter der Bestellnummer 20.020.001,77 erhältlich.

PFL Taste

Die PFL- und P-Solo-Tasten sind gegenseitig elektronisch gekoppelt. Ist eine der beiden Tasten aktiviert, wird sie automatisch beim Drücken der andern ausgeschaltet.

Die Vorhörtaste (PFL = Pre Fader Listening) ist als Impulstaste mit elektronischer Umschaltung und LED-Anzeige ausgeführt. Sie schaltet das Audiosignal vor dem Flachbahnregler auf die Vorhörsammelschiene.

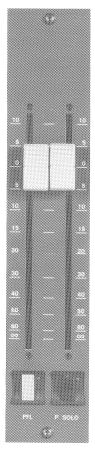
Wird auf der Leiterplatte die Brücke X---Z eingelötet (vgl. Schema: Option a), so ist die PFL-Funktion nur bei geschlossenem Fader möglich. In der Grundausführung ist keine Brücke eingebaut. Das PFL-Signal wird also nicht durch den Fader beeinflusst.

P Solo Taste

Die Abhörtaste 'Positional Solo' (Impulstaste mit elektronischer Umschaltung und LED-Anzeige) schaltet das Audiosignal nach Fader und Panorama-Regler auf die Vorhörsammelschiene.

Signalstromkreis

Der Flachbahnregler ist mit einem Schalter versehen, der beim Öffnen des Reglers ein Signal an die logische Steuerung gibt. Abhängig von der Stellung der Schalter Mute, Eingangswähler, Summenwahl, Summenregler und eventuell Mic-Cut entsteht am Ausgang je ein Faderstartsignal pro Eingang Mic, Line und Tape.



2. Symmetrierverstärker

1.911.112 1.911.122

Der Symmetrierverstärker dient der Adaptation des Insert-Ein- und Ausgangs an asymmetrische Peripheriegeräte. Pro Kanal ist dazu ein Verstärker mit asymmetrischem Eingang und trafolosem, symmetrischem Ausgang sowie ein Verstärker mit trafolosem, symmetrischem Eingang und asymmetrischem Ausgang vorgesehen. Diese Anordnung stellt asymmetrische Insert- Ein- und Ausgänge zusätzlich zu den symmetrischen Anschlüssen zur Verfügung.

D/2

Technische Daten Symmetrierverstärker: <u>Allgemein</u>

Frequenzgang 30 Hz...16kHz ±0,5 dB

Klirrfaktor < 80 dB
Fremdspannungsabstand 100 dB
Verstärkung (asym. → sym.) 6 dB
Dämpfung (sym. → asym.) 6 dB

Verstärkerteil 1

Eingang: unsymmetrisch
Eingangsimpedanz > 10 kOhm
Max. Eingangspegel +20 dBu

Ausgang: symmetrisch, ohne Trafo

Ausgangsimpedanz < 50 Ohm Max. Last > 600 Ohm Max Ausgangspegel + 24 dBu

Verstärkerteil 2

Eingang: symmetrisch, ohne Trafo

Eingangsimpedanz > 10 kOhm

Max. Eingangspegel +24 dBu

Ausgang: unsymmetrisch

Ausgangsimpedanz < 100 Ohm

Max. Ausgangspegel +20 dBu

Max. Lastwiderstand >1 kOhm

3. Technische Daten der Baugruppe

Elektrisch: Stromaufnahme maximal: <u>1.911.110</u> <u>1.911.112</u> <u>1.911.120</u> <u>1.911.120</u>

 Speisung ±15V
 ≈10mA
 ≈20mA
 ≈20mA
 ≈45mA

 Speisung -6V
 ≈15mA
 ≈15mA
 ≈15mA
 ≈15mA

Mechanisch: Masse Frontschild: 40,4mm x 210mm

Tiefe: 129mm

Audiodaten: Siehe Kapitel 1 "Allgemeines"

EDITION: 29. Januar 1990 D/3

Mono/stereo fader, with/without balanced insert

page	CONTENTS	
2	Operator controls	1.
2	Balancing amplifier	2.
3	Technical data of the module	3.
5	Circuit diagrams	4.

VALIDITY

This information applies to the following modules:

	Insert, unbalanced	Insert, balanced
Mono fader "A"	1.911.110.83	1.911.112.83
Stereo fader "A"	1.911.120.84	1.911.122.84

1. Operator controls

Fader

Linear fader with conductive plastic strip. A fader contact, built into the fader strip of the linear fader is closed by the wiper when a fader start is performed. This design eliminates the need for a microswitch and switch point alignment (see below). In order to maintain proper mechanical and electrical function, the fader should be cleaned and oiled as required. Detailed instructions and the required utensils are contained in the 'Studer fader service kit', part No. 20.020.001.77.

PFL key

The PFL key and the P-Solo key are electronically interlocked. If either of these two keys is activated, the other is automatically deactivated.

The prefader listening (PFL) key is implemented as a momentary-action push button with electronic changeover and a pilot LED. It connects the prefader audio signal to the prelistening bus.

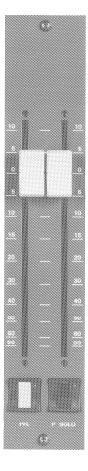
If the X--Z Jumper Is soldered Into the circuit board (see circuit diagram: option a), the PFL function is only enabled when the fader is closed. This jumper is not installed in the standard version, i.e. the PFL signal is not influenced by the fader.

P Solo key

The 'Positional Solo' key (momentary-action push button with electronic changeover and pilot LED) connects the audio signal after the fader and the panorama potentiometer to the prelistening bus.

Signal circuit

The fader is equipped with a switch that outputs a signal to the logic control when the fader is opened. Depending on the switch settings mute, input selector, master selection, master fader, and possibly Mic-Out, a fader start signal for each mic, line, and tape input becomes available on the output.



2. Balancing amplifier

1.912.112 1.912.122

The balancing amplifier is used for adapting the insert input and output to unbalanced peripherals. For each channel an amplifier with unbalanced input and as well as an amplifier with transformerless, balanced input and unbalanced output are available (Fig. 2). This arrangement makes unbalanced insert inputs and outputs available in addition to the balanced outputs.

Technical data Balancing amplifier:

<u>General</u>

Frequency response 30 Hz...16 kHz ± 0.5 dB

Distortion <80 dB Signal-to-noise ratio 100 dB Gain (unbal. → bal.) 6 dB Attenuation (bal. → unbal.) 6 dB

Amplifier section 1

Input: unbalanced Input impedance > 10 kohm Max. input level +20 dBu

Output: balanced, transformerless

Output impedance <50 ohm Max. load >600 ohm Max. output level +24 dBu

Amplifier section 2

Input: balanced, transformerless

Input impedance > 10 kohm

Max. input level +24 dBu

Output: unbalanced

Output impedance < 100 ohm

Max. output level +20 dBu

Max. load impedance > 1 kohm

3. Technical data of the modules

Electrical: Power consumption, max.: <u>1.911.110</u> <u>1.911.112</u> <u>1.911.120</u> <u>1.911.122</u>

±15 V supply ≈10mA ≈20mA ≈20mA ≈45mA -6 V supply ≈15mA ≈15mA ≈15mA ≈15mA

Mechanical: Front panel dimensions: 40.4 mm x 210 mm

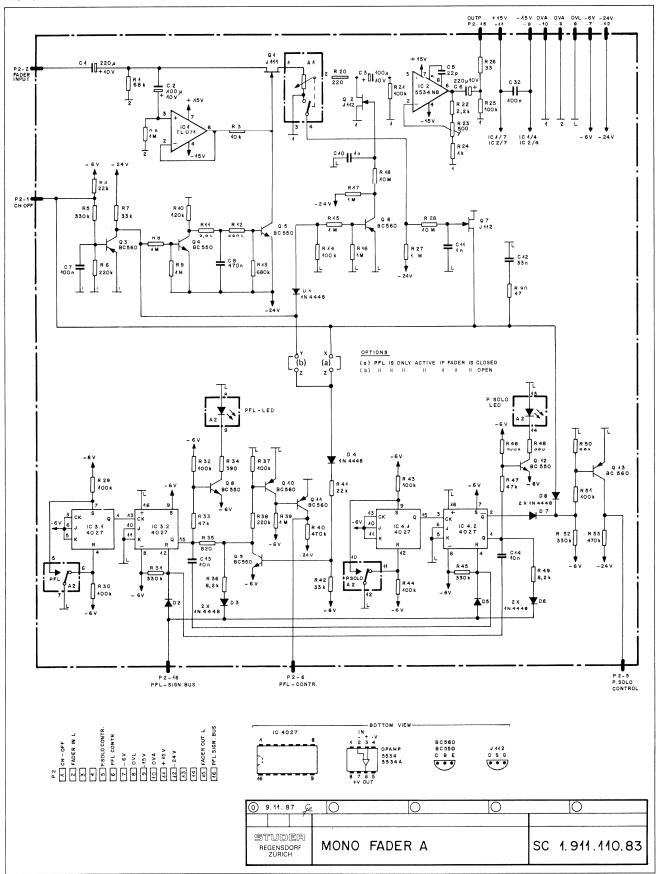
Depth: 129 mm

Audio data: See Section 1, "General"

EDITION: 29. Januar 1990

4. Circuit diagrams / Schemateil

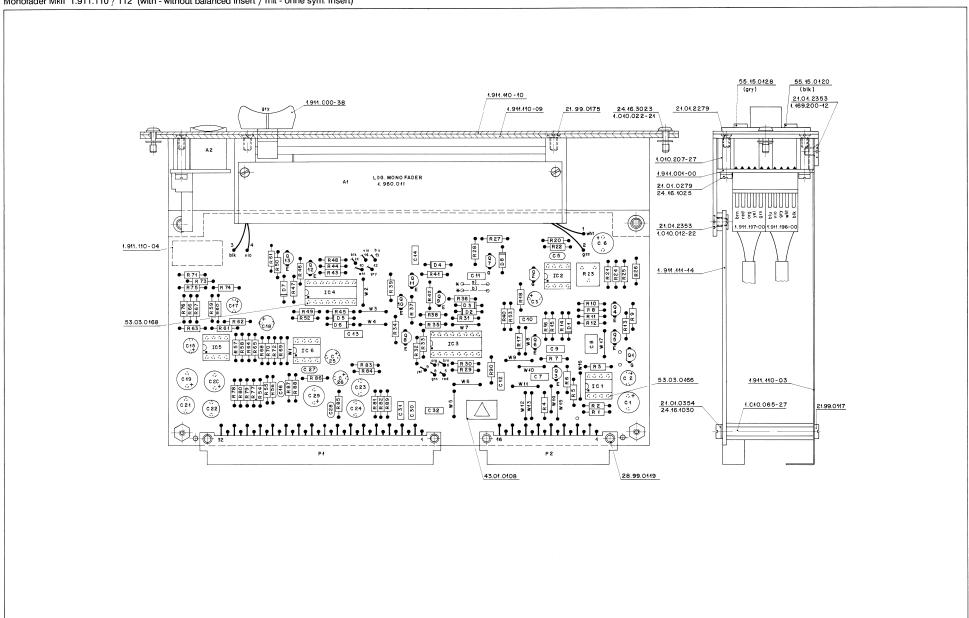
Monofader Mkll 1.911.110



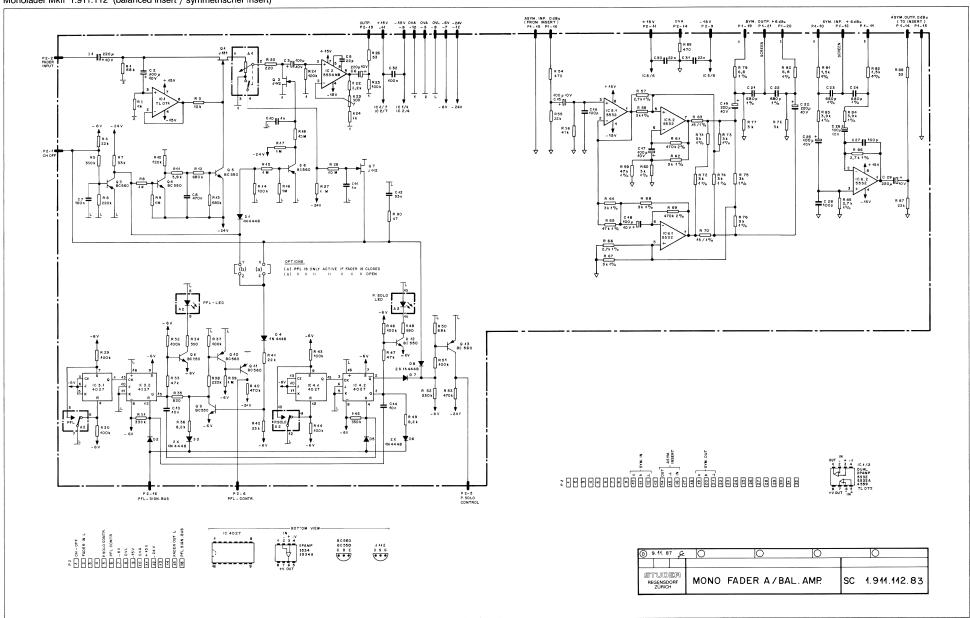
Monofader MkII 1.911.110 / 112 (with - without balanced insert / mit - ohne sym. Insert)

	REF.No	DESCRIPTIONMANUFACTURE	
01 A1 A2 C2 C3 C5 C6	1.960.011.00 1.960.011.81 1.911.001.00 59.22.3221 59.22.3101 59.22.3101 59.34.2220 59.22.3221 59.06.0104	mono fader St mono fader St pushbutton board N-N St 220 uf 10V EL 100 uf 10V EL 100 uf 10V EL 22 pf CER 220 uf 10V EL	R32 57.11.4104 100 kOhm
C8 C10 C11 C12 C13 C14 C15 C16 C17 C18 C19 C19	59.06.0474 59.06.0102 59.06.0102 59.06.0103 59.06.0103 59.06.0103 59.22.3101 59.22.3101 59.22.321 59.22.3221	470 nF 3.3 nF 1 nF PE 1 nF PE 10 nF 10 nF 10 nF 100 uF 10	R41 57.11.4222 22 kOhm R42 57.11.4333 33 kOhm R43 57.11.4104 100 kOhm R44 57.11.4104 100 kOhm R45 57.11.4343 330 kOhm R46 57.11.4104 100 kOhm R47 57.11.4473 47 kOhm R49 57.11.4473 47 kOhm R49 57.11.4822 8.2 kOhm R49 57.11.4683 68 kOhm R50 57.11.4334 330 kOhm
C21 C22 C23 C24 C26 C26 C27 C27	59.05.1001 59.05.1681 59.05.1681 59.05.1681 59.22.3101 59.22.3101 59.34.4101 59.34.4101 59.22.3221	000 pr 1% PP ^ 680 pF 1% PP * 100 uF 10V EL * 100 uF 10V EL * 100 uF CER * 120 uP CER * 120 uF 10V EL * 100 uP CER * 120 uP CER *	R53
C30 C31 C32 D1 D2 D3	59.06.0223 59.06.0223 59.06.0104 50.04.0125 50.04.0125 50.04.0125 50.04.0125	22 nF PE * 22 nF PE * 100 nF PE 1N4448 ar 1N4448 ar	R62 57.11.3302 3 k0hm 1½ * R63 57.11.3150 15 0hm 1½ * R64 57.11.3302 3 k0hm 1½ * R65 57.11.3473 47 k0hm 1½ * R66 57.11.3272 2.7 k0hm 1½ * NY R67 57.11.3302 3 k0hm 1½ * NY R68 57.11.3302 3 k0hm 1½ * NY R68 57.11.3302 3 k0hm 1½ * NY R69 57.11.4474 470 k0hm 2½ * NY R69 57.11.4474 4
D5 D6 D7 D8 IC1 IC2 IC3	50.04.0125 50.04.0125 50.04.0125 50.04.0125 50.04.0125 50.09.0103 50.05.0244 50.07.0027	1M4448 ar 1M448 ar 1M4448 ar 1M448 ar 1M4448 ar 1M448 ar 1M4448 ar 1M448 ar 1M4448 ar 1M448 ar 1M4448 ar 1M448 ar 1M4448 ar 1M448 ar 1M4448 ar 1M448 ar 1M4448 ar 1M4448 ar 1M448 ar 1	yy R71 57.11.3302 3 kOhm 1% * yy R72 57.11.3302 3 kOhm 1% * yy R73 57.11.3302 3 kOhm 1% * y R73 57.11.3302 3 kOhm 1% *
IC4 IC5 IC6 P1 P2	50.07.0027 50.09.0105 50.09.0105 54.01.0359 54.11.2007 50.03.0216	10	R81 57.11.3152 1.5 kOhm 1½ * R82 57.11.3152 1.5 kOhm 1½ * R83 57.11.3392 3.9 kOhm 1½ * R84 57.11.3392 3.9 kOhm 1½ * R85 57.11.3392 2.7 kOhm 1½ *
Q2 Q3 Q4 Q5 Q7 Q8 Q9	50.03.0350 50.03.0496 50.03.0497 50.03.0497 50.03.0496 50.03.0350 50.03.0497 50.03.0497 50.03.0496	J112 N-J-FET MC BC550 PNP, Ic<100mA, B>290 BC550 NPN, Ic<100mA, B>290 BC550 NPN, Ic<100mA, B>290 BC550 NPN, Ic<100mA, B>290 BC560 PNP, Ic<100mA, B>290 BC560 PNP, Ic<100mA, B>290 BC560 PNP, Ic<100mA, B>290 BC550 NPN, Ic<100mA, B>290 BC560 PNP, Ic<100mA, B>290 BC560 PNP, Ic<100mA, B>290 BC560 PNP, Ic<100mA, B>290 BC560 PNP, Ic<100mA, B>290	ot R87 57.11.4223 22 kOhm ** y R88 57.11.4330 33 Ohm ** y R89 57.11.4471 470 Ohm y R90 57.11.4470 47 Ohm This position list is valid for: ty Diese Positionsliste ist gultig fur: y -1.911.110.83 Mono Fader Unit A Mk2
Q11 Q12 Q13		, ,	<pre>by * = only/nur 1.911.112.83 by CER = ceramic, EL = electrolytic, PE = polyester</pre>
R1 R2 R3 R4 R5 R6 R7 R8 R9	57.11.4683 57.11.4105 57.11.4103 57.11.4223 57.11.4224 57.11.4234 57.11.4105 57.11.4105 57.11.4105	68 kOhm 1 MOhm 10 KOhm 22 KOhm 230 KOhm 240 KOhm 1 MOhm 1 MOhm 1 MOhm 1 MOhm	MANUFACTURER: Mot=Motorola, NS=Mational Semiconductors, Ph=Philips, Ra=Raytheon, SGS=SGS/Ates, Sig=Signetics, Six=Siliconics, St=Studer, TI=Texas Instruments HISTORY: 20.3.90 (1) New Fader 1.960.011.81 1.911.110.83 MONO FADER UNIT A Mk2 TA 89/10/1700
R11 R12 R13 R14 R15 R16 R17 R18	57.11.4392 57.11.4684 57.11.4684 57.11.4104 57.11.4105 57.11.4105 57.11.5106 57.11.4221	3.9 kOhm 680 kOhm 680 kOhm 100 kOhm 1 MOhm 1 MOhm 1 MOhm 200 Ohm	1.911.110.83 MONO FADER UNIT A Mk2 HOR90/03/2001
R21 R22 R23 R24 R25 R27 R26 R27 R28 R29	57.11.4104 57.11.4222 58.01.8501 57.11.4102 57.11.4104 57.11.3105 57.11.3105 57.11.4104 57.11.4104	100 kOhm 2.2 kOhm 500 Ohm 1 kOhm 100 kOhm 1 MOhm 100 MOhm 100 kOhm 100 kOhm	

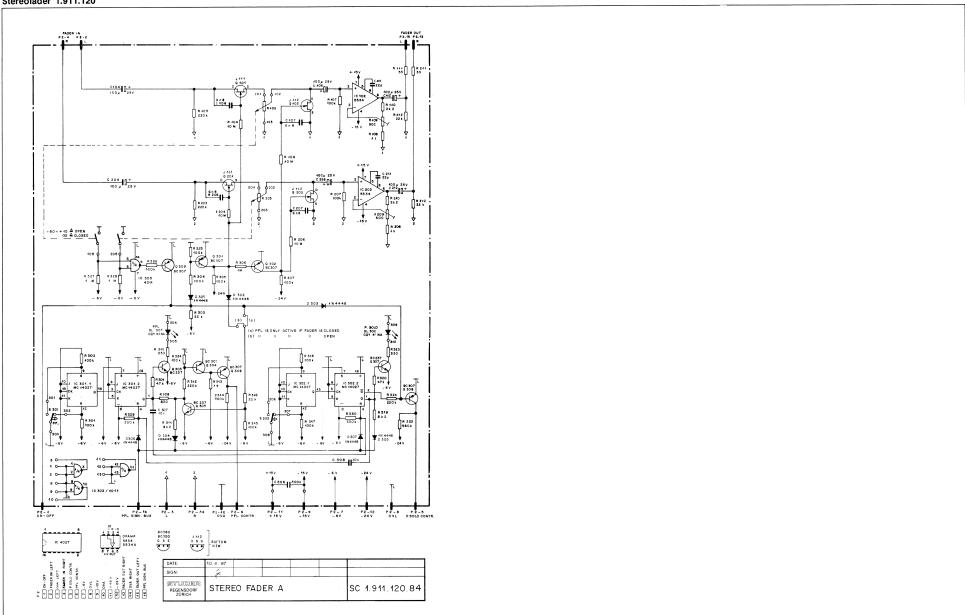
Monofader MkII 1.911.110 / 112 (with - without balanced insert / mit - ohne sym. Insert)



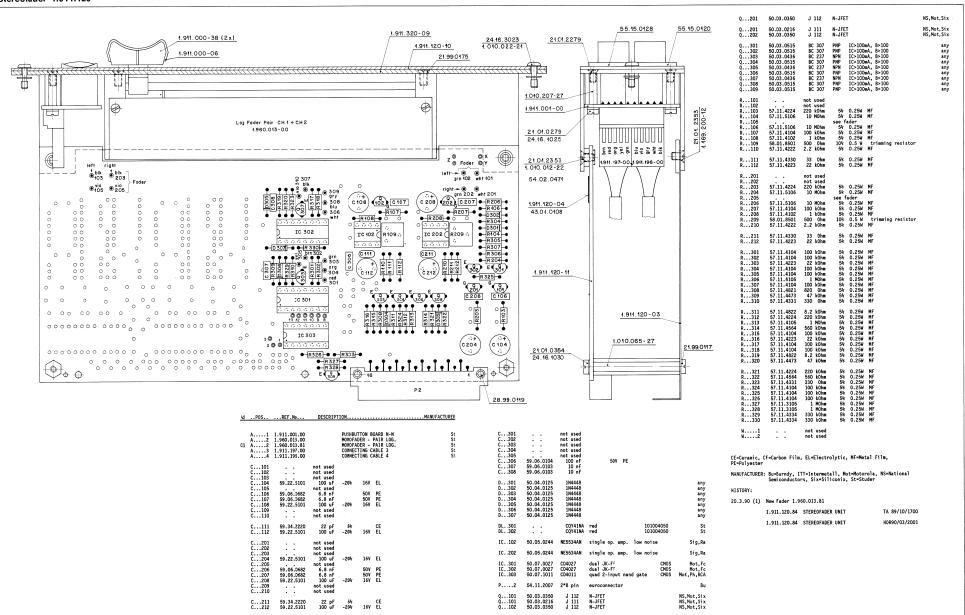
Monofader Mkll 1.911.112 (balanced insert / symmetrischer Insert)



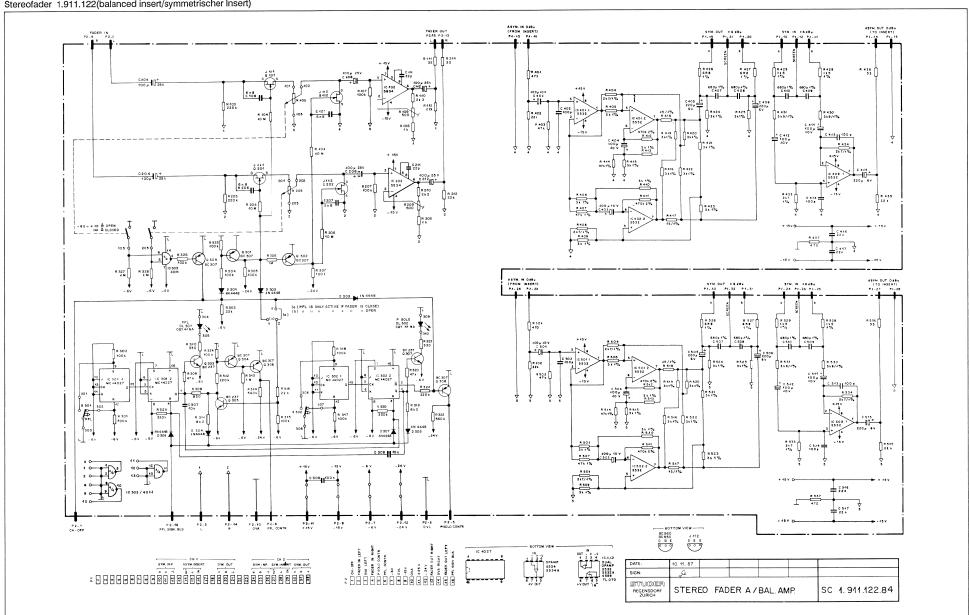
Stereofader 1.911.120



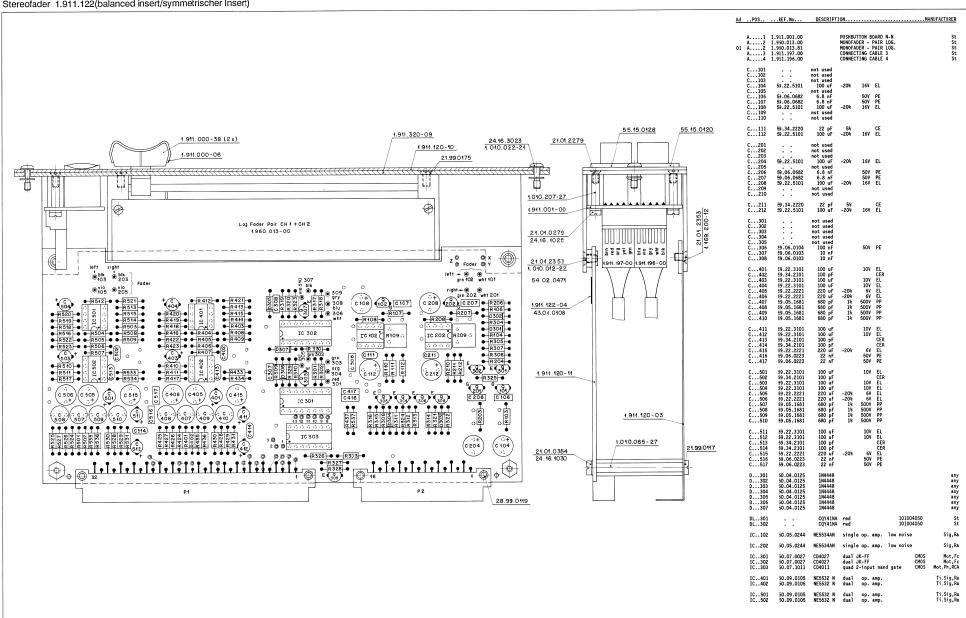
Stereofader 1.911.120



Stereofader 1.911.122(balanced insert/symmetrischer Insert)



Stereofader 1.911.122(balanced insert/symmetrischer Insert)



Stereofader 1.911.122 (balanced insert / symmetrischer Insert)

POS	REF.No	. DESCE	RIPTION	MANUFACTURER					
2	54.01.0359 54.11.2007	2*16pin 2*8 pin	euroconnector euroconnector	Bu Bu	R421 R422 R423 R424	57.11.3302 57.11.3302 57.11.3302	3 kOhm 3 kOhm 3 kOhm	1% 0.25W MF 1% 0.25W MF 1% 0.25W MF	
101 101 102	50.03.0350 50.03.0216 50.03.0350	J 112 J 111 J 112	N-JFET N-JFET N-JFET	NS,Mot,Six NS,Mot,Six NS,Mot,Six	R425 R426	57.11.3302 57.11.3302 57.11.3689	3 kOhm 3 kOhm 6.8 Ohm	1% 0.25W MF 1% 0.25W MF 1% 0.25W MF	
201 201 202	50.03.0350 50.03.0216 50.03.0350	J 112 J 111 J 112	N-JFET N-JFET N-JFET	NS,Mot,Six NS,Mot,Six NS,Mot,Six	R427 R428 R429 R430	57.11.3689 57.11.3152 57.11.3152 57.11.3392	6.8 Ohm 1.5 kOhm 1.5 kOhm 3.9 kOhm	1% 0.25W MF 1% 0.25W MF 1% 0.25W MF 1% 0.25W MF	
301 302 303	50.03.0515 50.03.0515 50.03.0436	BC 307 BC 307 BC 237	PNP IC>100mA, B>100 PNP IC>100mA, B>100 NPN IC>100mA, B>100	any any any	R431 R432 R433	57.11.3392 57.11.3272	3.9 kOhm not used 2.7 kOhm	1% 0.25W MF 1% 0.25W MF	
304 305 306 307	50.03.0515 50.03.0436 50.03.0515 50.03.0436	BC 307 BC 237 BC 307 BC 237	PNP IC-100mA, B-100 NPN IC-100mA, B-100 PNP IC-100mA, B-100 PNP IC-100mA, B-100 NPN IC-100mA, B-100	any any any any	R434 R435 K436 R437	57.11.3272 57.11.4223 57.11.4330 57.11.4471	2.7 kOhm 22 kOhm 33 Uhm 470 Ohm	1% 0.25W MF 5% 0.25W MF 5% 0.25W MF 5% 0.25W MF	
308	50.03.0515 50.03.0515	BC 307 BC 307 not used	PNP IC>100mA, B>100 PNP IC>100mA, B>100	any any	R501 R502 R503	57.11.4471 57.11.4223 57.11.4473	470 Ohm 22 kOhm 47 kOhm	5% 0.25W MF 5% 0.25W MF 5% 0.25W MF	
101 102 103 104	57.11.4224 57.11.5106	not used 220 kOhm 10 MOhm	5% 0.25W MF 5% 0.25W MF		R504 R505 R506	57.11.3272 57.11.3302 57.11.3302	2.7 kOhm 3 kOhm 3 kOhm	1% 0.25W MF 1% 0.25W MF 1% 0.25W MF	
105 106 107 108	57.11.5106 57.11.4104 57.11.4102	10 MOhm 100 kOhm 1 kOhm	see fader 5% 0.25W MF 5% 0.25W MF 5% 0.25W MF		R507 R508 R509 R510	57.11.3473 57.11.3272 57.11.3302 57.11.3302	47 kOhm 2.7 kOhm 3 kOhm 3 kOhm	1% 0.25W MF 1% 0.25W MF 1% 0.25W MF 1% 0.25W MF	
109	57.11.4102 58.01.8501 57.11.4222 57.11.4330	500 Ohm 2.2 kOhm 33 Ohm	5% 0.25W MF 10% 0.5 W trimming resistor 5% 0.25W MF 5% 0.25W MF	•	R511 R512 R513	57.11.4474 57.11.4474	470 kOhm 470 kOhm 3 kOhm	5% 0.25W MF 5% 0.25W MF 1% 0.25W MF	
111	57.11.4223	22 kOhm not used	5% 0.25W MF		R511 R512 R513 R514 R515 R516	57.11.3473 57.11.3302 57.11.3302 57.11.3150 57.11.3150	47 kOhm 3 kOhm 3 kOhm	1% 0.25W MF 1% 0.25W MF 1% 0.25W MF	
202 203 204 205	57.11.4224 57.11.5106	not used 220 kOhm 10 MOhm	5% 0.25W MF 5% 0.25W MF see fader		R517 R518 R519 R520	57.11.3150 57.11.3150 57.11.3302 57.11.3302	15 Ohm 15 Ohm 3 kOhm 3 kOhm	1% 0.25W MF 1% 0.25W MF 1% 0.25W MF 1% 0.25W MF	
206	57.11.5106 57.11.4104 57.11.4102	10 MOhm 100 kOhm 1 kOhm	5% 0.25W MF 5% 0.25W MF 5% 0.25W MF		R521 R522 R523 R524	57.11.3302 57.11.3302	3 kOhm 3 kOhm	1% 0.25W MF 1% 0.25W MF 1% 0.25W MF	
208	58.01.8501 57.11.4222 57.11.4330	500 Ohm 2.2 kOhm 33 Ohm	10% 0.5 W trimming resistor 5% 0.25W MF 5% 0.25W MF	•	R524 R525 R526 R527	57.11.3302 57.11.3302 57.11.3302 57.11.3689	3 kOhm 3 kOhm 3 kOhm 6.8 Ohm	1% 0.25W MF 1% 0.25W MF 1% 0.25W MF	
212	57.11.4223 57.11.4104 57.11.4104	22 kOhm 100 kOhm 100 kOhm	5% 0.25W MF 5% 0.25W MF 5% 0.25W MF		R527 R528 R529 R530	57.11.3689 57.11.3152 57.11.3152 57.11.3392	6.8 Ohm 1.5 kOhm 1.5 kOhm 3.9 kOhm	1% 0.25W MF 1% 0.25W MF 1% 0.25W MF 1% 0.25W MF	
303	57.11.4223 57.11.4104 57.11.4104	22 kOhm 100 kOhm 100 kOhm	5% 0.25W MF 5% 0.25W MF 5% 0.25W MF		R531 R532	57.11.3392	3.9 kOhm not used	1% 0.25W MF	
306 307 308 309	57.11.4105 57.11.4104 57.11.4821 57.11.4473 57.11.4331	1 MOhm 100 kOhm 820 Ohm 47 kOhm 330 Ohm	5% 0.25W MF 5% 0.25W MF 5% 0.25W MF 5% 0.25W MF 5% 0.25W MF		R533 R534 R535 R536 R537	57.11.3272 57.11.3272 57.11.4223 57.11.4330 57.11.4471	2.7 kOhm 2.7 kOhm 22 kOhm 33 Ohm 470 Ohm	1% 0.25W MF 1% 0.25W MF 5% 0.25W MF 5% 0.25W MF 5% 0.25W MF	
311	57.11.4822 57.11.4224	8.2 kOhm 220 kOhm	5% 0.25W MF 5% 0.25W MF		W1 W2		not used not used	3.	
313 314 315 316	57.11.4105 57.11.4564 57.11.4104 57.11.4223 57.11.4104	1 MOhm 560 kOhm 100 kOhm 22 kOhm 100 kOhm	5% 0.25W MF 5% 0.25W MF 5% 0.25W MF 5% 0.25W MF 5% 0.25W MF		CE=Ceramic,	CF=Carbon Film	ı, EL=Electro	olytic, MF=Metal Fi	lm,
317 318 319 320	57.11.4104 57.11.4104 57.11.4822 57.11.4473	100 kOhm 100 kOhm 8.2 kOhm 47 kOhm	5% 0.25W MF 5% 0.25W MF 5% 0.25W MF 5% 0.25W MF		PE=Polyester MANUFACTURER			ll, Mot=Motorola, conix, St=Studer	NS=National
321	57.11.4224 57.11.4564	220 kOhm 560 kOhm	5% 0.25W MF 5% 0.25W MF		HISTORY:			,	
323	57.11.4331 57.11.4104 57.11.4104	330 Ohm 100 kOhm 100 kOhm	5% 0.25W MF 5% 0.25W MF 5% 0.25W MF 5% 0.25W MF		20.3.90 (1)	New Fader 1.9 1.911.122.84		R/BAL.AMP.UNIT	TA 89/10/1700
326	57.11.4104 57.11.3105 57.11.3105 57.11.4334	100 kOhm 1 MOhm 1 MOhm 330 kOhm	5% 0.25W MF 5% 0.25W MF 5% 0.25W MF			1.911.122.84	STEREOFADER	R/BAL.AMP.UNIT	HOR90/03/2001
401	57.11.4334 57.11.4471 57.11.4223	330 k0hm 470 0hm 22 k0hm	5% 0.25W MF 5% 0.25W MF 5% 0.25W MF						
403 404 405 406	57.11.4473 57.11.3272 57.11.3302 57.11.3302	47 kOhm 2.7 kOhm 3 kOhm 3 kOhm	5% 0.25W MF 1% 0.25W MF 1% 0.25W MF 1% 0.25W MF						
407	57.11.3473 57.11.3272 57.11.3302 57.11.3302	47 kOhm 2.7 kOhm 3 kOhm 3 kOhm	1% 0.25W MF 1% 0.25W MF 1% 0.25W MF 1% 0.25W MF 1% 0.25W MF						
411	57.11.4474 57.11.4474 57.11.3302	470 kOhm 470 kOhm 3 kOhm	2% 0.25W MF 2% 0.25W MF 1% 0.25W MF						
414 415 416	57.11.3302 57.11.3473 57.11.3302 57.11.3302 57.11.3150	47 kOhm 3 kOhm 3 kOhm	1% 0.25W MF 1% 0.25W MF 1% 0.25W MF						
417 418 419	57.11.3150 57.11.3150 57.11.3302	15 Ohm 15 Ohm 3 kOhm	1% 0.25W MF 1% 0.25W MF 1% 0.25W MF						

Master Unit Mk II

INHAI	_T	Seite
1.	Aligemeines	2
2.	Blockschaltbild	2
3.	Flachbahnregler	3
4.	PFL - Taste	3
5.	PSolo – Taste	4
6.	Limiter	4
7.	Pegeldiagramm	4
8.	Schemateil	5

GELTUNGSBEREICH

Die folgenden Informationen beziehen sich auf die Einschübe mit den Nummern:

	ohne Limiter	mit Limiter
Mono Master Unit Mk II	1.911.315	1.911.317
Dual Master Unit Mk II	1.911.325	1.911.335

Die verwendeten Prints tragen die Nummern 1.911.323 (Kanal 1 bzw. Mono) und 1.911.324 (Kanal 2).

1. Allgemeines

Der STUDER Summenregler ist einheitlich aus einem Summierverstärker in Null-Ohm-Technik, einem Flachbahnregler, einer Vorhörtaste sowie einem Leitungsverstärker mit Ausgangstransformator aufgebaut. Die Ausführungen mit Limiteranschluss verfügen zusätzlich über den Kippschalter 'Limiter on'. Er aktiviert die Dual Limiter - Europakarte 1.915.700, die im AF Insert der Summeneinheit eingeschlauft wird. Bei den Dual Master Einheiten können die beiden Limiterkanäle durch den Kippschalter 'Link' gekoppelt werden. Das Summensignal kann als 'PF out' (pre fader) vor oder als 'AF out' (after fader) nach dem Flachbahnregler abgegriffen und wieder eingespeist werden. Pro Kanal ist zudem ein vollkommen unabhängiger, elektronisch symmetrierter Verstärker vorhanden, der je nach Anwendung für die Bereitstellung symmetrischer Ein - und Ausgänge verschaltet werden kann. Nebst den asymmetrischen Einschleifpunkten ist der 'AF in' symmetrisch ausgeführt.

2. Blockschaltbild

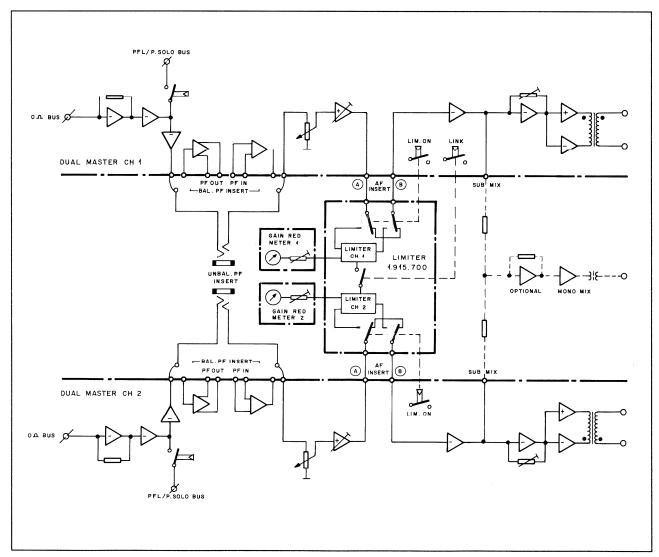


Fig. 1 Das Blockschaltbild zeigt die Version 1.911.335. Bei Ausführungen ohne Limiter wird an dessen Stelle eine Drahtbrücke bestückt. (Verbindung: A ... B)

D/2

3. Flachbahnregler

Der Studer Flachbahnregler ist mit einer Widerstandsschicht aus leitendem Kunststoff ausgerüstet, deren logarithmische Widerstandskennlinie engen Toleranzen folgt. Zieht man den Fader zu, so wird mit dem Schleifer ein Fader - Endkontakt in der Widerstandsschicht geschlossen. Durch diese Bauart entfallen Mikroschalter und Schaltpunkt - Einstellungen.

Der Faderweg misst 104mm.

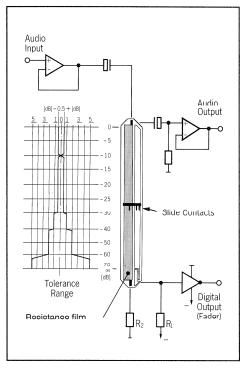


Fig. 2 Schematische Darstellung des Faderschaltkreises mit Toleranzdiagramm der Widerstandsschicht.

4. PFL - Taste

Die PFL- und P-Solo-Tasten sind gegenseitig elektronisch gekoppelt. Ist eine der beiden Tasten aktiviert, wird sie automatisch beim Drücken -der andern ausgeschaltet.

Die Vorhörtaste (PFL = Pre Fader Listening) ist als Impulstaste mit elektronischer Umschaltung und LED-Anzeige ausgeführt. Sie schaltet das Audiosignal vor dem Flachbahnregler auf die Vorhörsammelschiene.

Die Optionen 3 und 4 der Tabelle auf dem Schema (S.7) koppeln die PFL Funktion mit der Faderstellung:

Mit der Drahtbrücke PFL ON ist nur bei offenem Fader ein PFL Signal zu hören. Die Brücke PFL OFF schaltet umgekehrt nur bei geschlossenem Fader ein PFL Signal durch.

EDITION: 30. Januar 1990 D/3

5. P Solo Taste

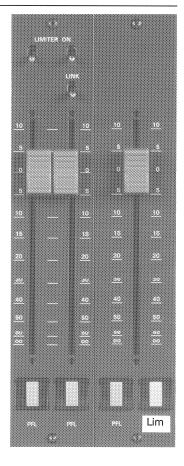
Die Abhörtaste 'Positional Solo' (Impulstaste mit elektronischer Umschaltung und LED-Anzeige) schaltet das Audiosignal nach Fader und Panorama-Regler auf die Vorhörsammelschiene.

6. Limiter

Der Stereo - Summenregler Nr. 1.911.335 ist mit der Limiter - Europakarte Nr. 1.915.700 verbunden. Diese wird für jeden Kanal separat durch den Kippschalter Limiter on aktiviert. Sollen die Limiter beider Kanäle gekoppelt arbeiten, muss der Kippschalter Link betätigt werden. Dies verhindert bei Stereowiedergabe ein Wandern der Schallquellen im Panoramafeld. Auch dle Mono Master Unit kann mit einem Limiter ausgerüstet werden. Die Funktion 'Limiter on' wird dann aber über eine zweite Impulstaste mit LED - Anzeige gesteuert

Angaben zum Limiter finden sich im Kapitel 8, Europakarten.





7. Pegeldiagramm

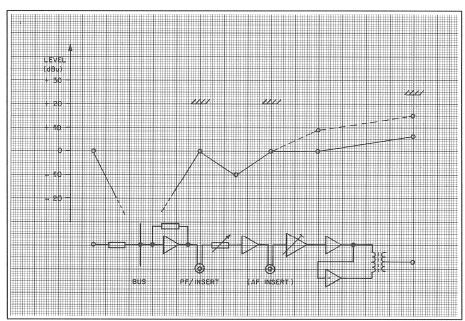


Fig. 4 Pegeldiagramm der Master Unit Mkll

 $\overline{D/4}$

Master Unit Mk II

page	CONTENTS
2	1. General
2	2. Block diagram
3	3. Fader
3	4. PFL key
4	5. PSolo key
4	6. Limiter
4	7. Level diagram
5	8. Circuit diagrams

VALIDITY

The following information relates to modules with the numbers:

Without limiterWith limiterMono Master Unit Mk II1.911.3151.911.317Dual Master Unit Mk II1.911.3251.911.335

The corresponding circuit boards are numbered as 1.911.323 (mono) and 1.911.323/324 (stereo).

1. General

The STUDER master fader consists of a summing amplifier in zero-ohm technology, a fader, a prefader listening key, as well as a line amplifier with output transformer. Versions with a limiter connector are additionally equipped with a 'Limiter on' toggle switch. It activates the dual EU-standard limiter PCB 1.915.700 which is connected to the AF insert of the master unit. On dual master units, the two limiter channels can be coupled by means of the 'Link' toggle switch. The master signals can be tapped before the fader as 'PF out', or after the fader as 'AF out' and reinserted. Each channel has a fully independent, electronically balanced amplifier which can be wired for balanced input and outputs, as required by the application. In addition to the balanced PF and AF insertion points, also the 'AF in' is implemented with balanced circuits.

2. Block diagram

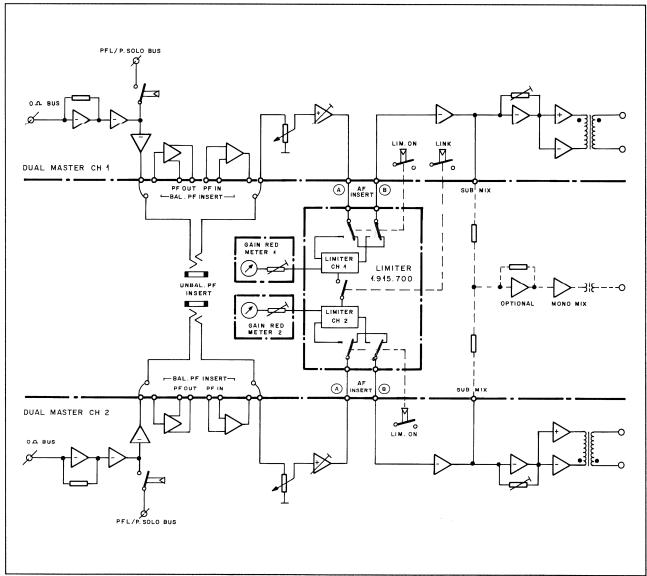


Fig. 1 The block diagram illustrates the version 1.911.335. In versions without a limiter a jumper is inserted in its place (connection: A...B)

E/2 EDITION: 30. Januar 1990

3. Linear fader

The Studer linear fader features a resistance film made of conductive plastic whose resistance characteristic is logarithmic within close tolerances. When the fader is being closed, a fader limit contact is closed in the resistance film. This design eliminates the need for a microswitch and switch point alignments.

The fader has a travel of 104 mm.

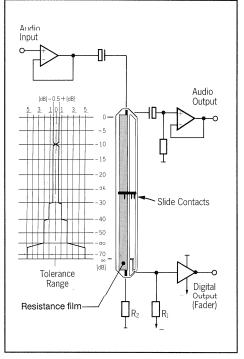


Fig. 2 Schematic representation of the fader circuit with tolerance diagram of the resistance film.

4. PFL key

The PFL key and the P.Solo key are electronically interlocked. If either of these two keys is activated, the other is automatically deactivated.

The prefader listening (PFL) key is implemented as a momentary-action push button with electronic changeover and pilot LED. It connects the prefader audio signal to the prelistening bus.

Options 3 and 4 of the table in the diagram (p.7) couple the PFL function to the fader setting:

With the PFL jumper in the ON position, a PFL signal can only be heard when the fader is open. Conversely, if the PFL jumper is in the OFF position, the PFL signal is only through-connected when the fader is closed.

5. P Solo key

The 'Positional Solo' key (momentary-action push button with electronic changeover and pilot LED) connects the audio signal after the fader and the panorama potentiometer to the prelistening bus.

6. Limiter

The stereo master fader No. 1.911.335 is connected to the EU-standard limiter board 1.915.700. This board is activated separately for each channel by the limiter toggle switch. If the limiters of both channels should work linked mode, the link toggle switch must be actuated. This prevents drifting of the sound sources in the panorama field during stereo reproduction. The mono master unit can also be fitted with a limiter. In this case the 'Limiter on' function is controlled via a second momentary-action push button with pilot LED.

The limiter specifications can be found in Section 8, EU-standard boards.

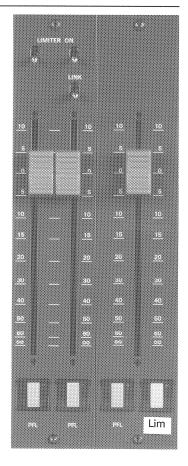


Fig. 3 Dual master unit MkII with limiter (1.911.335) and mono master unit MkII with limiter (1.911.317)

7. Level diagram

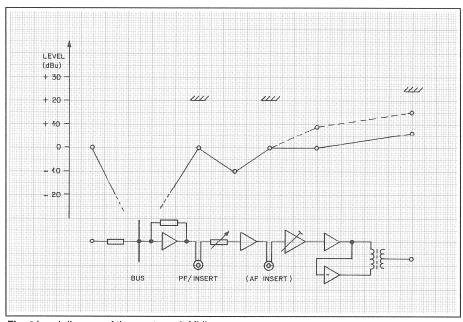
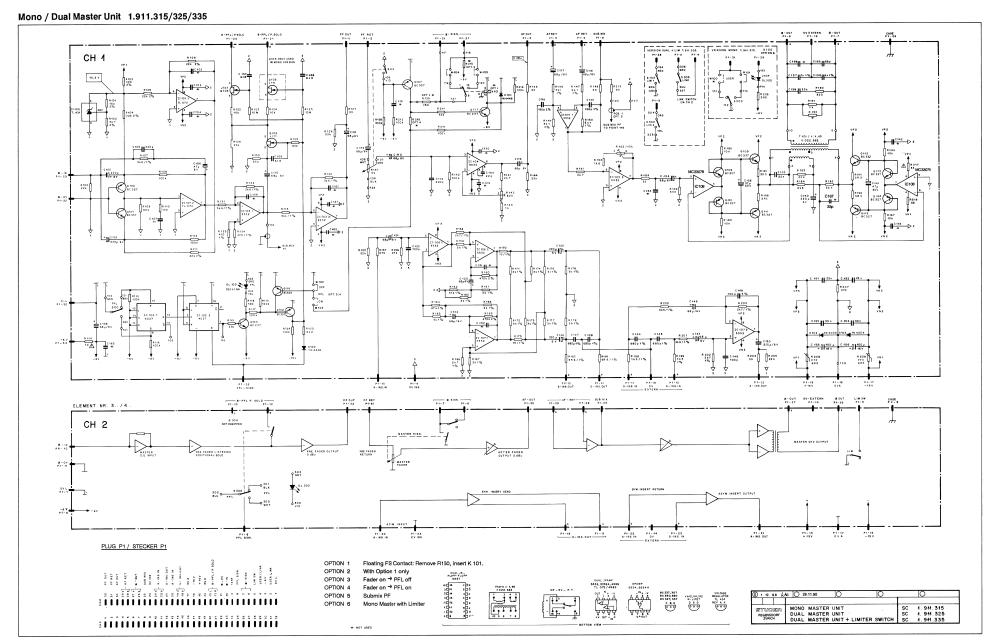
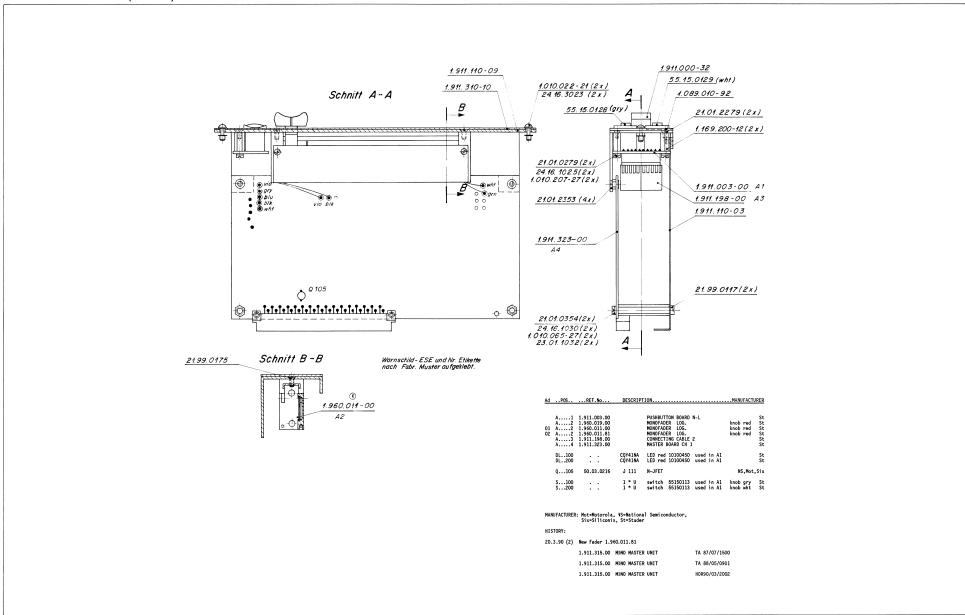


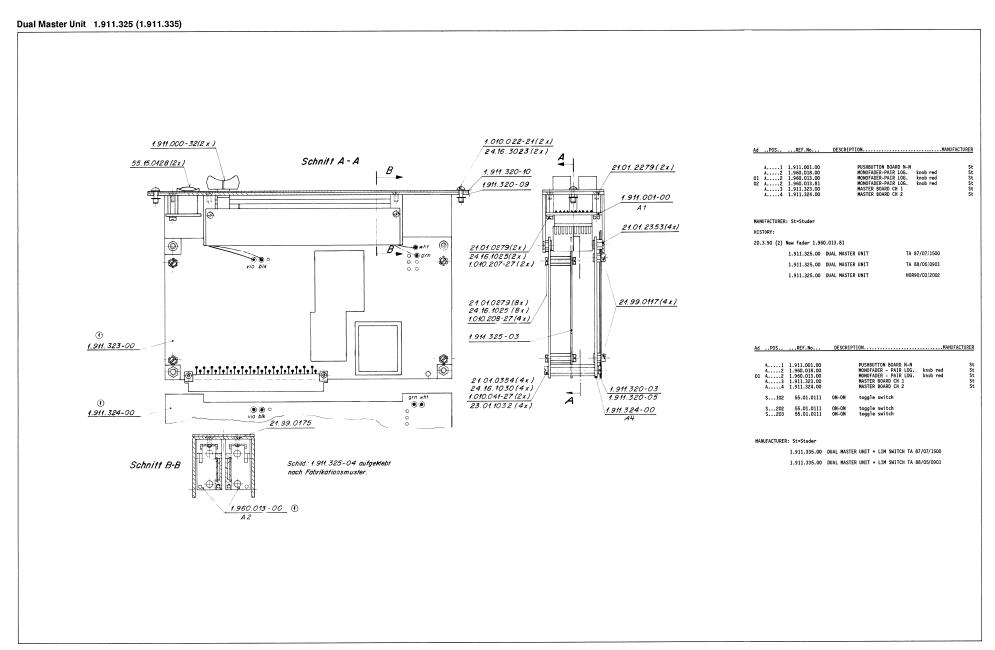
Fig. 4 Level diagram of the master unit MkII

8. Circuit diagrams / Schemateil



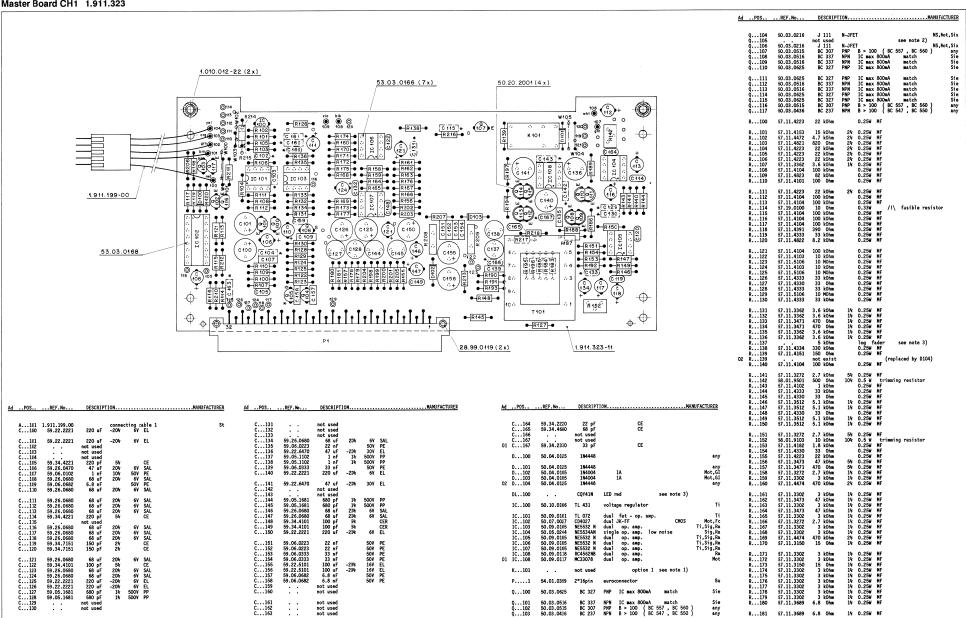
Mono Master Unit 1.911.315 (1.911.317)





MASTER UNIT MKII

Master Board CH1 1.911.323



1.911.315/325/335

MASTER UNIT MKII

Master Board CH1 1.911.323

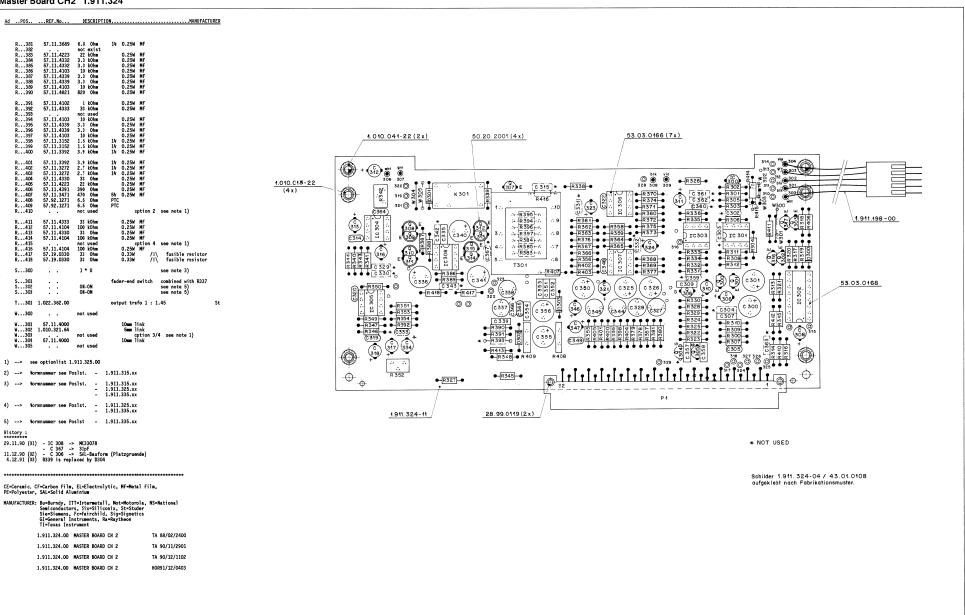
```
... MANUFACTURER
Ad ..POS.. ...REF.No... DESCRIPTION.....
     R. . 182
R. . 183
R. . 184
F. 114
R. . 185
F. 11. 4332
R. . 186
F. 11. 4133
R. . 187
F. 11. 4339
R. . 188
F. 1189
F. 1189
F. . 189
F. 1190
F. 11. 4103
F. . 190
F. 11. 4821
                                                       not exist
22 kOhm
3.3 kOhm
3.3 kOhm
10 kOhm
3.3 Ohm
10 kOhm
820 Ohm
                                                                                             0.25W MF
                                                         1 kOhm
33 kOhm
not used
10 kOhm
3.3 Ohm
10 kOhm
1.5 kOhm
1.5 kOhm
3.9 kOhm
                             57.11.4102
57.11.4333
                             57.11.4103
57.11.4339
57.11.4339
57.11.4103
57.11.3152
57.11.3152
57.11.3392
                                                                                   0.25M MF
0.25M MF
0.25M MF
0.25M MF
1% 0.25M MF
1% 0.25M MF
1% 0.25M MF
                           57.11.3392 3.9 (Ohm
57.11.3272 2.7 (Ohm
57.11.3272 2.7 (Ohm
57.11.4330 33 Ohm
57.11.4223 22 (Ohm
57.11.4391 390 Ohm
57.11.4391 390 Ohm
57.11.3491 470 Ohm
57.92.1271 6.5 Ohm
not used
                                                                                   1% 0.25N MF
1% 0.25N MF
1% 0.25N MF
0.25N MF
0.25N MF
0.25N MF
5% 0.25N MF
PTC
PTC
       R...201
R...202
R...203
R...204
R...205
R...206
R...207
R...208
R...209
R...210
                                                                                                       option 2 see note 1)
                           57.11.4333 33 kOhm
57.11.4104 100 kOhm
57.11.4303 33 Ohm
57.11.4104 100 kOhm
not used
57.11.4104 100 kOhm
57.19.0330 33 Ohm
      R...211
R...212
R...213
R...214
R...215
R...216
R...217
R...218
                                                                                            0.25W MF
0.25W MF
0.25W MF
0.25W MF
                                                                                     0.25M MF
option 4 see note 1)
0.25M MF
0.33M /1\ fu-2111
                                                                                                              MF
/!\ fusible resistor
/!\ fusible resistor
                                                            1 * U
                                                                                                                           see note 3)
       S...100
                               . .
                                                                                     fader-end switch combined with R137 see note 4)
       S...101
S...102
S...103
                                                         ON-ON
not used
       T...101 1.022.362.00
                                                                                      output trafo 1 : 1.45
       W...100 . .
      W...101 57.11.4000
W...102 1.010.321.64
W...103 ... not used
W...104 57.11.4000
W...105 ... not used
                                                                                             10mm link
5mm link
option 3/4 see note 1)
10mm link
1) --> see optionlist 1.911.325.00
2) --> Normnummer see Poslst. - 1.911.315.xx
3) --> Normnummer see Poslst. - 1.911.315.xx
- 1.911.325.xx
- 1.911.335.xx
4) --> Normnummer see Poslst. - 1.911.335.xx
 History:
29.11.90 (01) - IC 108 -> MC33078
- C 167 -> 33pf
4.12.91 (02) R139 is replaced by D104
CE=Ceramic, CF=Carbon Film, EL=Electrolytic, MF=Metal Film, PE=Polyester, SAL=Solid Aluminium
MANUFACTURER: Bu-Burndy, ITT-Intermetall, Mot-Motorola, NS-Mational
Semiconductors, Six-Siliconix, St-Studer
Sie-Siemens, Ferfairchid, Sig-Signettics
GI-General Instrument, Ra-Raytheon
TI-Texas Instrument
                           1.911.323.00 MASTER BOARD CH 1
                                                                                                                       TA 88/02/2400
                                                                                                                       TA 90/11/2901
                          1.911.323.00 MASTER BOARD CH 1
                                                                                                                       HOR91/12/0402
                           1.911.323.00 MASTER BOARD CH 1
```

Master Board CH2 1.911.324

master be	pard CH2	. 1.31	1.324					
AdPOS	REF.No	DESCRIPT	[ION	MANUFACTURER	AdPOS	REF.No	DESCRIP	TIONMANUFACTURER
A301	1.911.198.00		connecting cable 2	St	Q302 Q303	50.03.0515 50.03.0436	BC 307 BC 237	PNP B > 100 (BC 557 , BC 560) any NPN B > 100 (BC 547 , BC 550) any
C300	59.22.2221	220 uF	-20% 6V EL		Q304 Q305	50.03.0216	not used J 111	N=.1FFT NS.Mot.Six
C301 C302	59.22.2221	220 uF not used	-20% 6V EL		Q306 Q307 Q308	50.03.0216 50.03.0515 50.03.0516	J 111 BC 307 BC 337	N-JFET NS,Mot,Six PNP B > 100 (BC 557, BC 560) any NPM IC max 800mA match Sie NPM IC max 800mA match Sie
C303 C304	59.34.4221	not used not used 220 pF	55 CF		Q308 Q309 Q310	50.03.0516 50.03.0625	BC 337 BC 327	NPN IC max 800mA match Sie PNP IC max 800mA match Sie
C305 C306 02 C306	59.22.6470 59.26.0470	47 uF 47 uF	-20% 6V FI		Q311	50.03.0625	BC 327 BC 337	PNP IC max 800mA match Sie
C307 C308	59.06.0102 59.26.0680	1 nF 68 uF	20% 6V SAL		Q312 Q313	50.03.0516 50.03.0516	BC 337 BC 337 BC 327	NPN IC max 800mA match Sie NPN IC max 800mA match Sie PNP IC max 800mA match Sie
C309 C310	59.06.0682 59.26.0680	6.8 nF 68 uF	50V PE 20% 6V SAL		Q314 Q315 Q316	50.03.0625 50.03.0625 50.03.0515	BC 327 BC 327 BC 307	PMP IC max 800mA match Sie PMP IC max 800mA match Sie PMP B > 100 (BC 557 , BC 560) Any NPN B > 100 (BC 547 , BC 550) Any NPN B > 100 (BC 547 , BC 550)
C311 C312	59.26.0680 59.26.0680	68 uF 68 uF	20% 6V SAL 20% 6V SAL		Ç317	50.03.0436	BC 237	NPN B > 100 (BC 547, BC 550) any
C313	59.26.0680 59.34.4221	68 uF 220 nF	20% 6V SAL 20% 6V SAL 5% CE		R300	57.11.4223	22 kOhm	0.25W MF
C314 C315 C316	59.26.0680	not used 68 uF	20% 6V SAL		R301 R302	57.11.4153 57.11.4472 57.11.4821 57.11.4223	15 k0hm 4.7 k0hm	2% 0.25W MF 2% 0.25W MF 2% 0.25W MF
C317 C318	59.26.0680 59.26.0680 59.34.7151	68 uF 68 uF 150 pF	20% 6V SAL 20% 6V SAL 2% CE		R303 R304 R305	57.11.4223 57.11.4223	820 Ohm 22 kOhm 22 kOhm	2% 0.25W MF
C319 C320	59.34.7151	150 pF	2% CE		R306 R307	57.11.4223 57.11.3362	22 kOhm 3.6 kOhm	2% 0.25W MF 1% 0.25W MF
C321 C322	59.26.0680 59.34.4101 59.26.0680	68 uF 100 pF 68 uF	20% 6V SAL 5% CE		R308 R309	57.11.4104 57.11.4823	100 k0hm 82 k0hm	0.25W MF 0.25W MF 0.25W MF
C323 C324	59.26.0680	68 uF 68 uF 220 uF	20% 6V SAL 20% 6V SAL -20% 6V EL		R310 R311	57.11.4101 57.11.4223	100 Ohm 22 kOhm	0.25W MF
C325 C326 C327	59.22.2221 59.22.2221 59.05.1681	220 uF	-20% 6V EL		R312 R313	57.11.4104 57.11.4104	100 k0hm 100 k0hm	0.25W MF 0.25W MF
C328 C329	59.05.1681	680 pF 680 pF not used	1% 500V PP 1% 500V PP		R314 R315 R316	57.19.0100 57.11.4104 57.11.4104	10 Ohm 100 kOhm	0.33W /!\ fusible resistor 0.25W MF
C330	• •	not used			R316 R317 R318	57.11.4104 57.11.4104 57.11.4391	100 k0hm 100 k0hm 390 0hm	0.25W MF 0.25W MF 0.25W MF
C331 C332 C333	::	not used			R319 R320	57.11.4333 57.11.4822	33 kOhm 8.2 kOhm	0.25W MF 0.25W MF
C334 C335	59.26.0680 59.06.0223	not used 68 uF 22 nF	20% 6V SAL 50V PE		R321	57.11.4104 57.11.4103	100 k0hm	0.25W MF
C336 C337	59.22.6470 59.05.1102	47 uF 1 nF 1 nF	-20% 30V EL		R322 R323	57.11.5106	10 k0hm 10 M0hm 10 k0hm	0.25W MF 0.25W MF 0.25W MF
C338 C339 C340	59.05.1102 59.06.0333 59.22.2221	1 nF 33 nF 220 uF	1% 500V PP 50V PE -20% 6V EL		R324 R325	57.11.4103 57.11.5106	10 k0hm 10 M0hm 33 k0hm	0.25W MF 0.25W MF 0.25W MF
C341	59.22.2221	220 ur 47 uF	-20% 30V EL		R326 R327 R328	57.11.4333 57.11.4330 57.11.4333 57.11.5106	33 Ohm 33 kOhm	0.25W MF 0.25W MF
C342 C343 C344	: :	not used			R329 R330	57.11.5106 57.11.4333	10 MOhm 33 kOhm	0.25W MF 0.25W MF
C344 C345 C346	59.05.1681 59.05.1681 59.26.0680	680 pF 680 pF 68 uF	1% 500V PP 1% 500V PP		R331	57.11.3362	3.6 kOhm	1% 0.25W MF 1% 0.25W MF
r 347	59.26.0680 59.26.0680 59.34.4101	68 uF 68 uF 100 pF	20% 6V SAL 20% 6V SAL 5% CER		R332 R333 R334	57.11.3362 57.11.3471 57.11.3471	3.6 kOhm 470 Ohm 470 Ohm	1% 0.25W NF 1% 0.25W NF
C348 C349 C350	59.34.4101 59.22.2221	100 pF 220 uF	CER -20% 6V EL		R335 R336	57.11.3362 57.11.3362	3.6 kOhm 3.6 kOhm	1% 0.25W MF 1% 0.25W MF
C351	59.06.0223 59.06.0223	22 nF 22 nF	50V PE		R337 R338	57.11.4334	5 kOhm 330 kOhm	log fader see note 4) 0.25W MF 0.25W MF
C352 C353	59.06.0223 59.06.0333 59.06.0333	22 nF 33 nF 33 nF	50V PE 50V PE 50V PE		R339 03 R339 R340	57.11.4151 57.11.4104	150 Ohm not exist 100 kOhm	
C354 C355 C356	59.22.5101	100 uF	-20% 16V EL -20% 16V FL		R341	57.11.3272	2 7 kOhm	
C357 C358	59.22.5101 59.06.0682 59.06.0682	100 uF 6.8 nF 6.8 nF	50V PE 50V PE		R342 R343	58.01.9501 57.11.4102 57.11.4333	500 Ohm 1 kOhm	5% 0.25W MF 10% 0.5 W trimming resistor 0.25W MF 0.25W MF
C359 C360	::	not used not used			R344 R345	57.11.4333 57.11.4330 57.11.3512	33 kOhm 33 Ohm 5.1 kOhm	0.25W MF 0.25W MF 1% 0.25W MF
C361 C362	: :	not used not used			R346 R347 R348	57.11.3512	5.1 kOhm	1% 0.25W MF 0.25W MF
C363 C364	59.34.2220	not used 22 pF	CE		R349 R350	57.11.4330 57.11.3512 57.11.3512	5.1 kOhm 5.1 kOhm	1% 0.25W MF 1% 0.25W MF
C365 C366	59.34.4680	68 pF not used	ČE		R351	57.11.4272	2.7 kOhm 10 kOhm	5% 0.25W MF 10% 0.5 W trimming resistor
01 C367	59.34.2330	not wsed 33 pF	CE		R352 R353 R354	58.01.9103 57.11.4182 57.11.4330	1.8 kOhm	0.25W MF 0.25W MF
D300	50.04.0125	1N4448		any	R355 R356	57.11.4330 57.11.4223 57.11.3473	33 Ohm 22 kOhm 47 kOhm	0.25W MF 5% 0.25W MF
D301 D302	50.04.0125 50.04.0105 50.04.0105	1N4448 1N4004 1N4004	1A 1A	any Mot,GI	R357 R358	57.11.3471 57.11.3272	470 Ohm 2.7 kOhm	1% 0.25W MF
D303 03 D304	50.04.0105 50.04.0125	1N4004 1N4448	1A	Mot,GI any	R359 R360	57.11.3302 57.11.4474	3 kOhm 470 kOhm	1% 0.25W MF 2% 0.25W MF
DL300		CQY41NA	LED red see note 3)		R361 R362	57.11.3302 57.11.3473	3 kOhm 47 kOhm 3 kOhm 47 kOhm	1% 0.25W MF 1% 0.25W MF
IC300	50.10.0106	TL 431	voltage regulator	Ti	R363 R364	57.11.3473 57.11.3302 57.11.3473	3 kOhm 47 kOhm	1% 0.25W MF 1% 0.25W MF
IC301 IC302	50.09.0101 50.07.0027	TL 072 CD4027	dual fet - op. amp. dual JK-FF CMOS	Ti Mot,Fc	R365 R366	57.11.3302 57.11.3272 57.11.3302	3 kOhm 2.7 kOhm 3 kOhm	1% 0.25W MF 1% 0.25W MF 1% 0.25W MF
IC303 IC304 IC305	50.09.0105 50.05.0244 50.09.0105	NE5532 N NE5534AN NE5532 N	dual op. amp. single op. amp. low noise dual op. amp.	Ti,Sig,Ra Sig,Ra Ti,Sig,Ra	R366 R367 R368 R369	57.11.3302 57.11.3302 57.11.4474	3 kUhm 3 kOhm 470 kOhm	1% 0.25W MF 2% 0.25W MF
IC306 IC307	50.09.0105 50.09.0105	NE5532 N NE5532 N	dual op. amp. dual op. amp.	Ti,Sig,Ra Ti,Sig,Ra	R370	57.11.3150	15 Ohm	1% 0.25W MF
IC308 01 IC308	50.09.0118 50.09.0117	RC4562NB MC33078	dual op. amp. dual op. amp.	Ra Mot	R371 R372	57.11.3302 57.11.3302	3 k0hm 3 k0hm 15 0hm	1% 0.25W MF 1% 0.25W MF 1% 0.25W MF
K301		not used	option 1 see note 1)		R373 R374 R375	57.11.3150 57.11.3302 57.11.3302	15 Ohm 3 kOhm 3 kOhm	1% 0.25W MF 1% 0.25W MF 1% 0.25W MF
P301	54.01.0359	2*16pin	euroconnector	Bu	R376 R377	57.11.3302 57.11.3302 57.11.3302	3 kOhm 3 kOhm	1% 0.25W MF
Q300	50.03.0625	BC 327	PNP IC max 800mA match	Sie	R378 R379	57.11.3302 57.11.3302	3 kOhm 3 kOhm	1% 0.25W MF 1% 0.25W MF
Q301	50.03.0516	BC 337	NPN IC max 800mA match	Sie	R380	57.11.3689	6.8 Ohm	1% 0.25W MF

MASTER UNIT MKII

Master Board CH2 1.911.324



STUDER 1.911.210

VCA FLACHBAHNREGLER

Der VCA Flachbahnregler 1.911.210 dient zur Regelung eines monophonen Tonsignals, wobei vier verschiedene Steuergrössen auf das Steuerglied (den spannungsgesteuerten Verstärker VCA) einwirken.

-Flachbahnregler

-Limiter/Kompressor

-externe Steuerung durch Gruppenregler

-externe Steuerung durch Rechner

BEDIENUNGSELEMENTE

LIMITER/KOMPRESSOR TEIL

GRM (gain reduction meter)

LED zeigen die Grösse der Abschwächung (rot) resp. Anhebung

(grün) an.

RELEASE Einstellung der Rücklaufzeit des Limiter/Kompressors (min. 50 ms max. 2...10 s). Die Rücklaufzeit ist nicht nur von der Potentiometerstellung sondern auch vom Programminhalt abhängig dh. kurze Uebersteuerungen ergeben kürzere Rücklaufzeiten als lange andauernde Ueberschreitung der Kompressionsschwelle.

RATIO Verhältnis der Dynamikkompression einstellbar von 2:1 ... 20:1. Um einen gleichbleibenden Lautstärke eindruck zu erzielen wird mit zunehmendem Ratio die Grundverstärkung angehoben.

COMPR IN Limiter/Kompressor wird eingeschaltet.

LINK Kopplung der Steuerspannung mit dem rechts benachbarten VCA Regler (Stereopäär). Die LED zeigt, dass der benachbarte Regler zugeschaltet ist. Die LED signalisiert den letzten angekoppelten Regler einer Gruppe.

0012 2 20 RATIO 10 COMPR IN 5 0 -0 _5 LINK 10 15 MASTER 20 日 30 40 GROUP 50 60 80 Α 00 AUTO

GROUP VCA GRUPPEN-TEIL

Mit dem Daumenradschalter kann eine von 10 Gruppenschienen angewählt werden. Eine der aufgeschalteten VCA Einheiten wird mit der Taste MASTER zum Gruppenregler erhoben. Er bestimmt nun als Gruppenregler die Verstärkung aller Gruppenmitglieder. Zur Bestätigung leuchtet die Group-LED bei allen Gruppenmitgliedern auf.

1.911.210

V C A FADER

The VCA fader 1.911.210 is used to control a monophonic audio signal. Four different control variables act on the controlling element of the voltage-controlled amplifier (VCA).

- Fader
- Limiter/compressor
- External control by group fader
- External control by computer

OPERATING CONTROLS

LIMITER/COMPRESSOR SECTION

GRM

(gain reduction meter) LEDs indicate the amount of gain reduction (red) or boost (green) respectively.

RELEASE Adjustment of the limiter / compressor's release time (min. 50 ms, max. 2 to 10 s). The release time depends not only on the potentiometer setting, but also on the program content, i.e. short overdriving results in shorter release times than if the compression threshold is continuously exceeded.

RATIO

Ratio of the dynamic range compression, adjustable from 2:1 to 20:1. In order to achieve a uniform loudness impression, the basic gain is boosted higher ratios. with

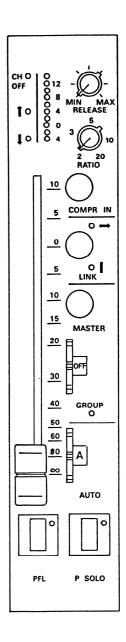
COMPR IN Limiter/compressor is switched on.

LINK

Coupling of the control voltage with the right-hand adjacent VCA fader (stereo pair). The LED indicates that the adjacent fader is switched into the circuit. The LED signals the last coupled fader of a group.

VCA GROUP SECTION GROUP

One of 10 group buses can be selected with the thumb wheel switch. One of the connected VCA units is designated as the group fader by pressing the MASTER key. This group fader now determines the gain of all group members. The group LED of all group members turns on to acknowledge this status.



AUTOMATIC SECTION

switched to GND open collector

AUTOMATI	KTEIL		AUTOMATIC SE	CTION	
			Indicating L	ED 4 ♦ For mat	ching the fader
Anzei ge-l	.ED ∮∳ dient zur Anpassung de Reglerstellung an die vom Rechne angebotene Steuerspannung.	er er		setting t	
AUTO	Daumenradschalter bestimmt de Zustand des VCA-Reglers gegenübe dem Rechner.		AUTO	the status relative to	switch,determines of the VCA fader the computer
A+B	Zustand wird durch den VCA Mod Selector bestimmt.	le	A+B R	VCA mode sel	termined by the ector. ts the absolute
R	READ übernimmt die absolut Reglerstellung vom Rechner.	e		fader sett computer.	ing from the
W	WRITE übergibt die absolute Regl stellung dem Rechner.	er	W		ers the absolute ting to the
U	UPDATE korrigiert Reglerstellun im Rechner (relativ zur Stellun O dB).	g	U		orrect the fader the computer to the OdB
М	MANUAL nur flachbahnregler i Betrieb	m	М	MANUAL, onl active.	y the fader is
ABHOERTE!	L		MONITORING S	ECTION	
PFL	Abhören des Audiosignals vor Reg		PFL	Prefader l audio signal	istening of the
P.SOL	O Kontrolle des Audiosignals nac Regler und nach Panoramapotentio- meter.	h -	P.SOLO		he audio signal der and after the entiometer.
TECHNISCH	E_DATEN	SPEC	IFICATIONS		
EINGANG unsym	metrisch, Eingangswiderstand	INPU	r unbalanced, :	impedance	> 50 kohms
	Eingangspegel (d=1%, f=1kHz) ärkung (Begrenzer aus)		max. level (doverall gain	d=1%, 1kHz) (limiter off)	+ 21 dBu + 10100dB
AUSGANG		OUTPL			
max. (d=1%, f=:	metrisch, Ausgangswiderstand Ausgangspegel (d=1%, f=1kHz) 1kHz) + 21 dBu		unbalanced, i max. le		< 50 Ohms
FREMDSPAN	NUNGSABSTAND (bez. auf OdBu)	S/N	RATIO (DIN 4	15405)	
	glerstellung +10dB glerstellung OdB		Fader positio		- 96 dB
	glerstellung -oodB		Fader position Fader position		-103 dB -110 dB
KOMPRESSOR	R / BEGRENZER	COMPR	ESSOR / LIMIT	'ER	
	tzpunkt		treshold leve	1	– 15 dBu+ 5 dBu
·	essionsverhältnis		Ratio (see di	agram)	2:1 20:1 gradual entry into desired compression (soft knee)
	echzeit aufzeit		attack time release time		1 ms 50 ms 2 s program dependent
	(bezogen auf OdBu)	SIGNA	L PATH (a) od	Bu)	
	enzgang (@ 0.5 dB) Reglerdämpfung (@ 16 kHz) aktor (@ 30Hz16kHz)		frequency res max. attenuat distortion (
STROMVERBR	RAUCH	POWER	REQUIREMENTS	•	
	i V, 90 mA		+/- 15 V, 9		
	o V, 90 mA o V, 1.5 mA		- 6 V, 9 - 24 V, 1.		
Sendeweg	ZUM RECHNER	AUTOM/ Send	ATION CONNECT	IONS	
	etrisch,Impedanz gsspannung		unbalanced, i output voltage		< 50 ohms OV +5.5V or 56V +5V
Empfangswe	g	Return	1		selectable with jumper
unsymm	etrisch, Impedanz gsspannung	L	unbalanced, in input voltage		> 5 kohms OV +5.5V or 56V +5V selectable with jumper

write

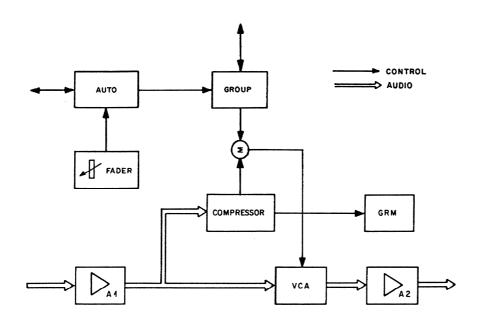
low high

tief hoch

Logiksignal write

BLOCKSCHALTBILD

BLOCK DIAGRAM



FUNKTIONSBESCHREIBUNG

Ueber den Eingangsverstärker A1 gelangt das Audiosignal auf den VCA und den Kompressor / Limiter. Nach dem VCA wird es über Verstärker A2 wieder ausgekoppelt.

Die Steuergleichspannung wird dem VCA als Summe der Regelspannung des Kompressor/Limiters und der Steuerspannung des Flachbahn reglers zusammen mit den Steuerspannungen des Rechners und der Gruppensammelschiene zugeführt.

Das GRM (Gain Reduction Meter) zeigt die Verstärkungsreduktion bei eingeschaltetem Limiter-Kompressor an.

AUTO - Block

Je nach Einstellung des Betriebsmodus-Schalters wird die vom Flachbahnregler abgegebene Steuerspannung verschiedenen Zielen zugeschaltet. Der Betriebsmodus-Schalter kann folgende sechs Stellungen einnehmen:

- A: Wahl des Master Status Moduls A
- B : Wahl des Master Status Moduls B
- R : READ Steuerung des VCA durch den Rechner
- W : WRITE Uebernahme der Faderstellung auf den Rechner und gleichzeitige Steuerung des VCA
- U: UPDATÉ Korrektur der vom Rechner angelieferten Steuerspannung, wobei jede Abweichung von der Faderstellung OdB als Korrekturfaktor eingelesen wird.
- M : MANUAL Steuerung des VCA durch den Flachbahnregler ohne Rechnerbeeinflussung.

Die Wahl der vier Zustände (R,W,U,M) durch die beiden übergeordneten Signale A + B erfordert eine zweipolige Steuerleitung. Die nachfolgenden Abbildungen zeigen den Verlauf der analogen Steuerspannungen und der beiden logischen Steuerbefehle.

FUNCTIONAL DESCRIPTION

The audio signal arriving from the input amplifier Ai is taken to the VCA and the compressor / limiter. After the VCA the audio signal is decoupled via amplifier A2. The DC control voltage is taken to the VCA as the sum of the compressor / limiter control voltage and the control voltage of the fader, together with the control voltages of the computer and of the group bus.

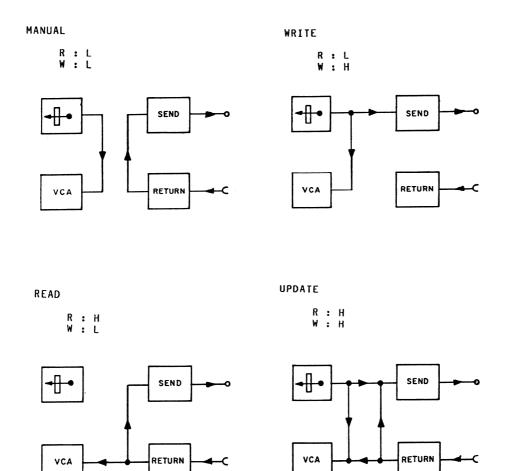
The GRM (gain reduction meter) indicates the amount of gain reduction when the limiter/compressor is switched on.

AUTO - Block

Depending on the setting of the mode switch, the control voltage supplied by the fader is connected to various targets. The mode switch features six settings:

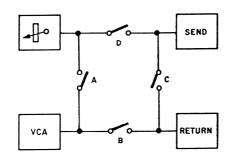
- A: Selects master status module A
- B: Selects master status module B
- R: READ Control of VCA via the computer
- W: WRITE Transfer of the fader setting to the computer with simultaneous control of the VCA.
- U: UPDATE Correction of the control voltage supplied by the computer; any deviation from the OdB fader setting is entered as a correction factor.
- M: MANUAL Control of the VCA gain by the fader without computer 'influence.

A 2-conductor control line is required for selecting the four states (R, W, U, M) with the aid of the two bus assignment signals A+B. The following diagrams illustrate the routing of the analog control voltage and the two logical control commands.



Die logischen Steuerbefehle R und W steuern die vier FET-Analogschalter wie folgt:

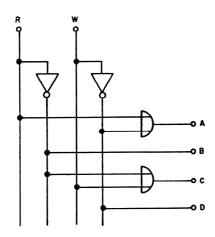
The logical control commands ${\sf R}$ and ${\sf W}$ control the four analog FET switches as follows:



R	w	Α	В	С	D
1	1	4	0	1	0
4	0	4	0	0	4
0	4	0	4	4	0
0	0	4	4	4	4

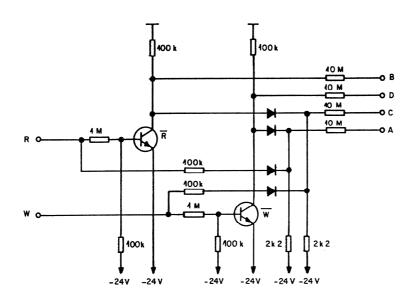
Die Umsetzung der Steuerbefehle wird wie folgt realisiert:

The control commands are translated as follows:

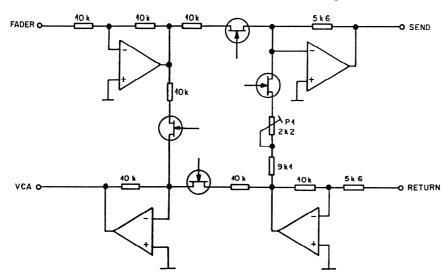


Das ergibt die folgende diskret aufgebaute Schaltung:

This results in the following discrete circuit:



Der analoge Teil der Schaltung ist nach folgendem Schema aufgebaut: The analog section of the circuit is implemented according to the following diagram:

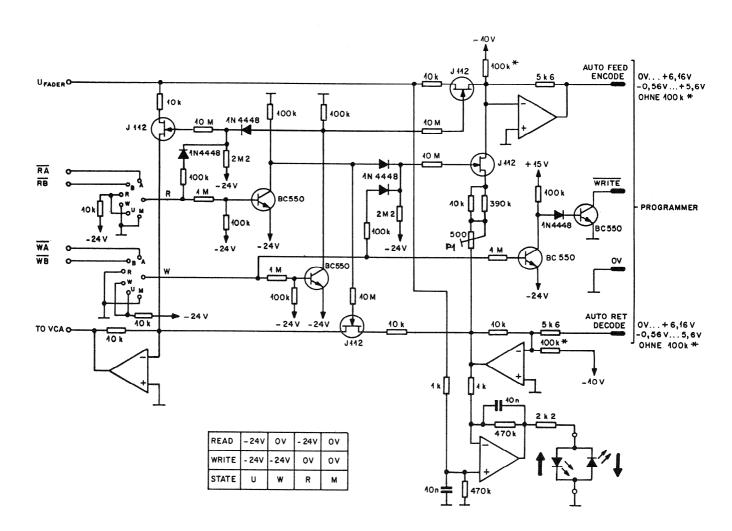


Der Trimmer P1 wird in Betriebsart MANUAL so eingestellt, dass die READ-Spannung der SEND-Spannung entspricht. Dadurch wird sichergestellt, dass der Rechner im READ und im unkorrigierten (FaderstellungOdB) UPDATE Modus die RETURN Spannung unverändert zurückerhält. Spannungsdifferenzen würden ja bei jedem Durchgang eine erneute Verstärkungsdrift bewirken.

Die nächste Abbildung zeigt die vollständige Automatikschaltung. Der Differenzverstärker zeigt an den beiden LEDs ob die Fader-Spannung gleich, grösser oder kleiner als die vom Rechner kommende Spannung ist. Um einen Lautstärkesprung beim Umschalten von READ auf WRITE resp. von UPDATE auf MANUAL zu vermeiden, müssen beide LED erloschen sein.

The trimmer P1 is set in the MANUAL mode in such a way that the READ voltage corresponds to the SEND voltage. This ensures that the computer receives the RETURN voltage without change in READ mode and in the uncorrected (fader setting OdB) UPDATE mode because any voltage differences would cause a new gain drift in every passage.

The following diagram illustrates the complete automatic circuit. The differential amplifier indicates on both LEDs whether or not the fader voltage is the same, larger or smaller than the voltage arriving from the computer. To avoid a loudness jump when switching from READ to WRITE or from UPDATE to MANUAL, both LEDs must be off.



FLACHBAHNREGLER

Die Einheit ist mit einem linearen Flachbahnregler ausgerüstet. Die Regelcharakteristik
des VCAs ist dB-linear zur angelegten
Steuerspannung. Um den gewünschten, weder
Spannungs- noch dB-linearen Reglerverlauf
zu erhalten, muss ein Funktionsgenerator
mit dem Verlauf

y = artanh x

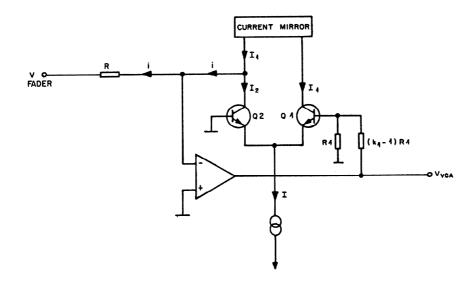
zwischen Fader und VCA geschaltet werden. Dies wird mit der folgenden Schaltung erreicht:

FADER

The module is equipped with a fader of linear taper. The control characteristic of the VCA is dB-linear to the applied control voltage. In order to achieve the desired fader behavior, that is neither voltage-linear nor dB-linear, a function generator with the characteristic

$$y = artanh x$$

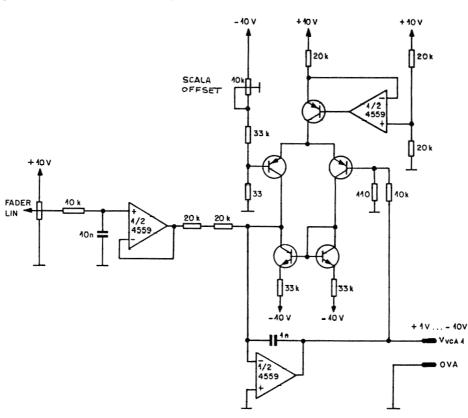
must be connected between the fader and the VCA. This is accomplished with the following circuit:



Mit dem Trimmer SCALA OFFSET lässt sich eine mechanische Abweichung des Faders zur Skala ausgleichen.

Schaltung des Funktions-Generators

With the SCALE OFFSET trimmer it is possible to compensate for any mechanical deviation of the fader relative to the scale.

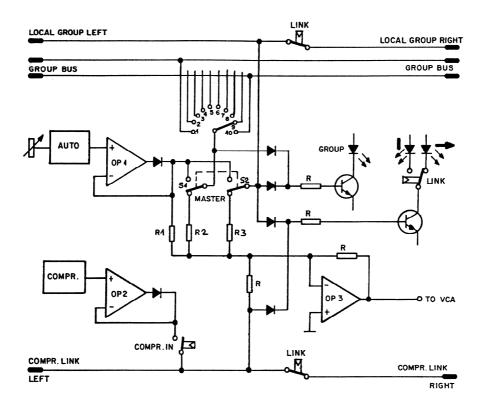


GRUPPENBILDUNG (GROUPING)

Blockdiagram Grouping

GROUPING

Grouping block diagram



Das vom Flachbahnregler abgegebene Steuersignal gelangt direkt über R1 auf den Addierer OP3, welcher den VCA steuert. Bei unbetätigtem MASTER-Schalter S1 gelangt die über den GROUP-Selector angewählte Steuerspannung zusätzlich auf den Addierer. Auch das vom LOCAL GROUP BUS stammende Signal wird an OP3 aufsummiert. Sobald der MASTER-Schalter betätigt wird, gelangt die eigene Faderspannung auf den angewählten Buss und übernimmt damit die Kontrolle über alle auf diesen Bus geschalteten Kanäle. Gleichzeitig wird die Faderspannung auch dem LOCAL GROUP BUS zugeführt und so der benachbarte, "gelinkte" Kanal beeinflusst.

The control signal supplied by the linear fader is taken directly via R1 to the adder OP3 which controls the VCA. When the MASTER switch S1 is not actuated, the control voltage chosen via the GROUP selector is applied to the adder. Also, the signal originating from the LOCAL BUS is added to OP3. As soon as the MASTER switch is actuated, the own fader voltage reaches the selected bus and thereby controls all channels connected to this bus. The fader voltage is also taken to the LOCAL GROUP BUS which means that the adjacent, "linked" channel is influenced.

KOMPRESSOR / LIMITER

Der VCA-FADER ist mit einem vorwärtsgesteuerten Kompressor / Limiter ausgerüstet. Die Regelspannung des VCA wird also vom Audiosignal abgeleitet, das vor dem Regelglied anliegt.

Das Kompressionsverhältnis ist im Bereich 2:1 bis 20:1 einstellbar und die Rücklauf-zeit kann ebenfalls in einem weiten Bereich gewählt werden. Diese ist aber nicht nur von der Potentiometereinstellung, sondern auch vom angebotenen Programm elber abhängig.

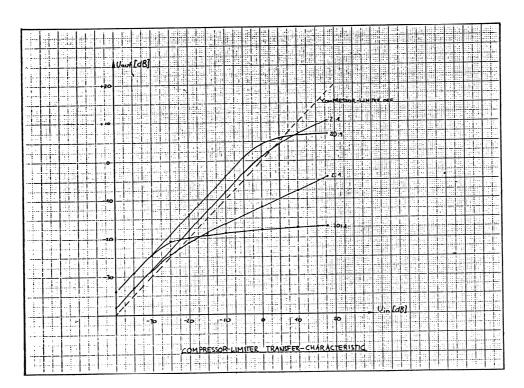
Jm einen konstanten Lautstärkeeindruck bei zunehmenderm Kompressions-Ratio zu erzielen wird die Grundverstärkung angehoben (max. 6dB bei einem Ratio von 20:1). Die statische Uebertragungskennlinie weist einen weichen Uebergang zwischen linearem und komprimiertem Bereich auf,um die dynamischen Regelverzerrungen zu verkleinern und die Regelvorgänge weitgehend unhörbar zu machen.

COMPRESSOR / LIMITER

The VCA FADER is equipped with a forward-controlled compressor / limiter. The control voltage of the VCA is consequently derived from the audio signal that is available at the input to the control element.

The compression ratio is adjustable from 2:1 to 20:1 and the release time can also be selected over a wide range. This depends not only on the potentiometer setting, but also on the offered program itself.

In order to achieve a uniform loudness sensation for increasing compression ratios, it is necessary to increase the basic gain (max. 6dB for a ratio of 20:1). The static transmission curve features a soft transition between the linear and the compressed zone in order to minimize dynamic control distortions and to render the control operation as inaudible as possible.



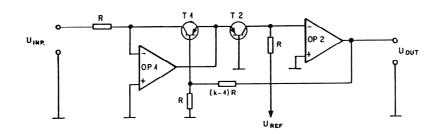
Logarithmierer / Rücklaufzeit

Logarithmation secti**on** / release time

Für die Ausgangsspannung des unten abgebildeten Logarithmierers gilt

U out = k * Ut In(
$$\frac{u_{in}}{u_{ref}}$$
)

The following applies to the output voltage of the logarithmation section illustrated below:



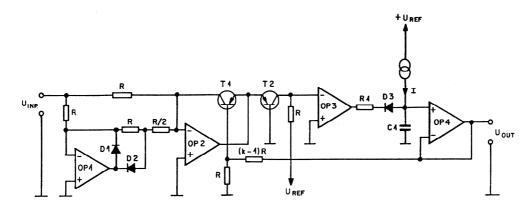
Fügen wir in die Rückkopplung des Logarithmierers einen Spitzengleichrichter mit Zeitkonstante, so folgt die Ausgangsspannung dem Logarithmus des Eingangsspitzenwertes. Ein aktiver Gleichrichter sorgt dafür, dass nur negative Eingangsspannungen entstehen können. Die nächste Abbildung zeigt den erweiterten Logarithmierer, dessen Ausgangsspannung bei höheren Frequenzen der Formel

folgt.

Durch anlegen einer Spannung an die Basis von T2 kann die Ansprechschwelle der Schaltung verändert werden. By inserting a peak rectifier with a time constant into the feedback of the logarithmation section, the output voltage follows the logarithm of the input peak value. An active rectifier ensures that only negative input voltages can occur. The next diagram illustrates the expanded logarithmation section whose output voltage, in the case of higher frequencies, follows the formula

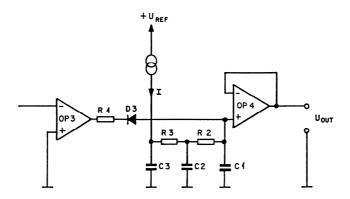
U out = k * Ut In
$$(\frac{\hat{U}_{NP}}{U_{REF}})$$

The threshold of this circuit can be changed by applying a voltage to the base of T2.

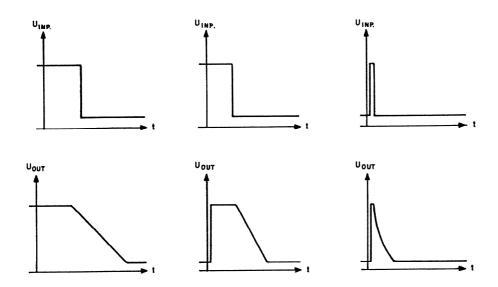


Die Ausgangsspannung gehorcht der Eingangsspannung nach der Funktion des Logarithmierers, verzögert durch die Ansprechzeitkonstante T1 = Rt*C1. Wird die Eingangsspannung reduziert, entlädt sich C1 mit I solange bis die log. Funktion wieder erfüllt ist (Rücklaufzeitkonstante). Wird die Stromquelle I variabel gemacht, kann die Rücklaufzeit in weiten Grenzen eingestellt werden. Durch Zuschaltung der Zeitkonstanten R2*C2 und R3*C3 und gleichzeitiger Beeinflussung der Stromquelle I durch die Ausgangsspannung wird die Rücklaufzeit dem Programminhalt angepasst. Diese programmabhängige Rücklaufzeit ergibt, besonders beim Anlegen von impulsförmigen hohen Eingangssignalen, einen wesentlich verbesserten Höreindruck.

The output voltage follows the input voltage according to the function of the logarithmation section, delayed by the response time constant T1 = R1*C1. If the input voltage is lowered, C1 discharges with I until the log. function is again satisfied (release time constant). If the current source is made variable, the release time constant can be adjusted over a wide range. The release time is adjusted to the program content by adding the time constants RC*C2 and RC3*C3 while simultaneously influencing the current source I. This program-dependent release time results in a much improved aural performance, particularly when pulseshaped input signals of high level are occuring.



Rücklaufzeiten nach verschiedenartiger Uebersteuerung: Release times resulting from different types of overmodulation:



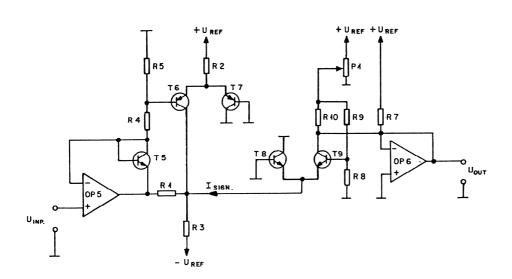
Eine tieffrequente Eingangsspannung erzeugt bei kurzer Rücklaufzeit eine Steuerspannung mit überlagerter Niederfrequenz (Rippel). Dies bewirkt eine Verstärkungsänderung innerhalb der Signalperiode und damit nichtlineare Verzerrungen. Um dies zu vermeiden, wird die Stromquelle I während und kurz nach jeder Verstärkungsreduktion gesperrt. With a short release time, a low-frequency input voltage produces a control voltage with a superposed audio frequency (ripple). This results in a gain change within the signal period and consequently non-linear distortions. This is avoided by blocking the current source I during and immediately after each gain reduction.

KOMPRESSIONSVERHAELTNIS (RATIO)

Das Kompressionsverhältnis wird wie die Rücklaufzeit mit einem spannungsgesteuerten Stromverteiler bestimmt. Der gesteuerte Strom ist proportional zur Ausgangsspannung des Logarithmierers. Mit der Spannungssteuerung lässt sich gleichzeitig noch die ratiobedingte Grundverstärkung des VCA beeinflussen.

COMPRESSION RATIO

As is the case for the release time, the compression ratio is also determined with a voltage-controlled current distributor. The controlled current is proportional to the output voltage of the logarithmation section. With this voltage control it is also possible to influence the ratio-related basic gain of the VCA.



Der linke Teil der obigen Schaltung dient zur Erzeugung des Soft-Limiting Teils der Kompressionskennlinie, d.h. des sanften Uebergangs zwischen unbeeinflusstem und komprimierten Teil der Kennlinie.

Der rechte Schaltungsteil bestimmt Kompressionsverhältnis., wobei an Potentiometer P1 das Ratio eingestellt wird. Der gleichzeitig über R10 nach OP6 fliessende Strom erhöht die Grundverstärkung mit zunehmendem Ratio, was einen gleichbleibenden Lautstärkeeindruck bewirkt.

Die so gewonnene Steuerspannung gelangt nun über den Schalter COMPR IN auf den Spannungssummierer des VCA, auf den LINK-Bus und das GAIN REDUCTION Meter.

GAIN REDUCTION METER

Die dB-lineare Anzeige des GRM erfolgt über 10 LED. Der angezeigte Bereich umfasst 14 ...-4 dB in 2 dB Schritten. Bei grossem Ratio und kleinem Eingangssignal wird, wie wir vorher gesehen haben, das Eingangs-signal verstärkt. Diese "negative signal verstärkt. Diese "neg. Verstärkungsreduktion" bringt daher "negative Dioden -2 oder -4 dB zum Aufleuchten.

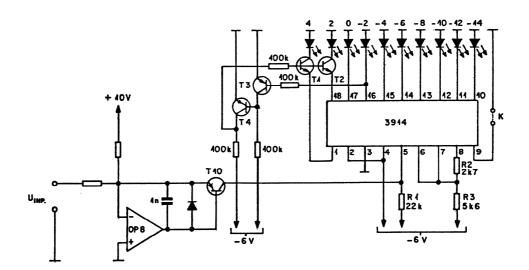
The left-hand section of the above circuit is used for producing the soft-limiting zone of the compression characteristic, i.e. the soft transition between the uninfluenced and compressed zone of the characteristic.

The right-hand circuit section determines the compression ratio which is set with potentiometer P1. The current flowing via R10 to OP6 boosts the basic gain with increasing ratios with the effect that a uniform loudness sensation is produced.

The control voltage derived in this manner is now taken via the COMPR IN switch to the voltage adder of the VCA, to the LINK bus, and to the GAIN REDUCTION meter.

GAIN REDUCTION METER

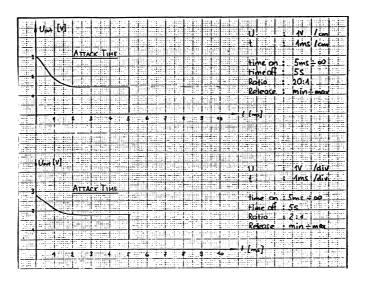
The dB-linear display of the GRM is implemented with 10 LEDs. The indicated range covers 14 dB of gain reduction. For high ratios and a small input signal, the input signal is amplified as we have seen before. This "negative gain reduction" causes the diodes -2dB or -4dB to turn on.

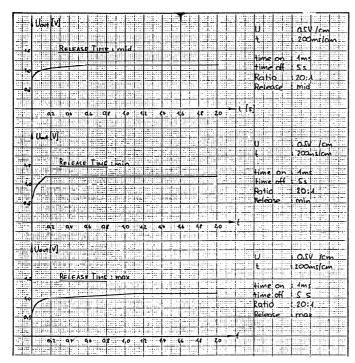


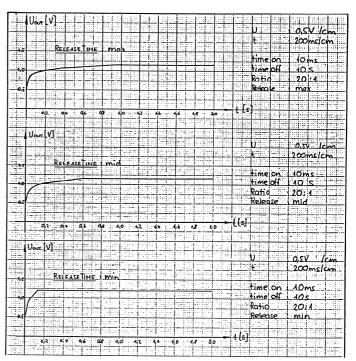
Mit der Brücke K auf obigen GRM Schema kann punktförmige Anzeige in eine Kollonnenförmige umgesetzt werden.

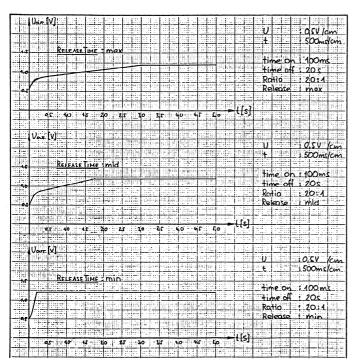
With jumper K, illustrated in the above diagram, a dot-shaped display can diagram, a transformed into a column-shaped one.

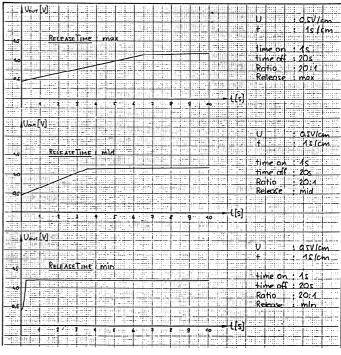
GR1

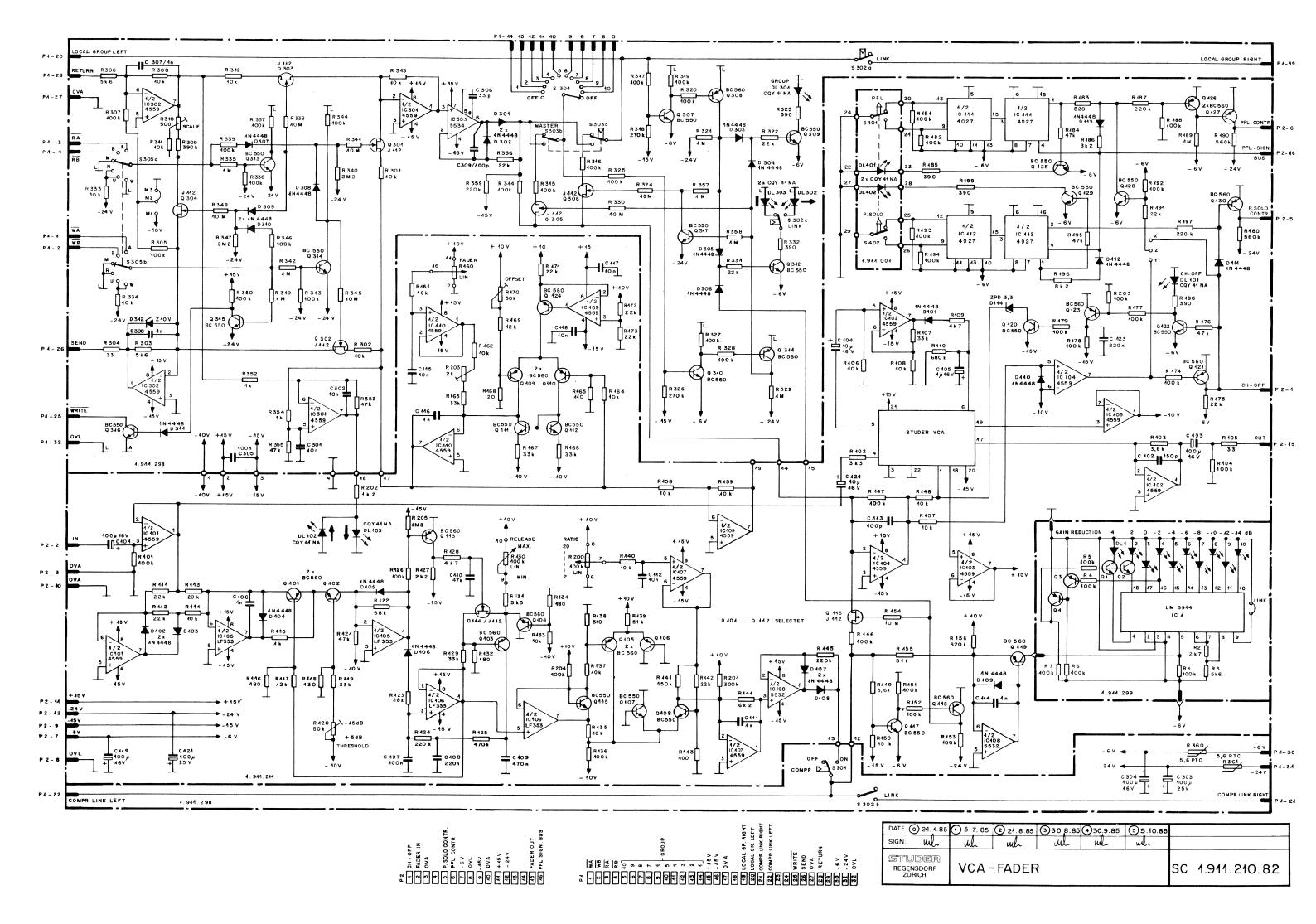


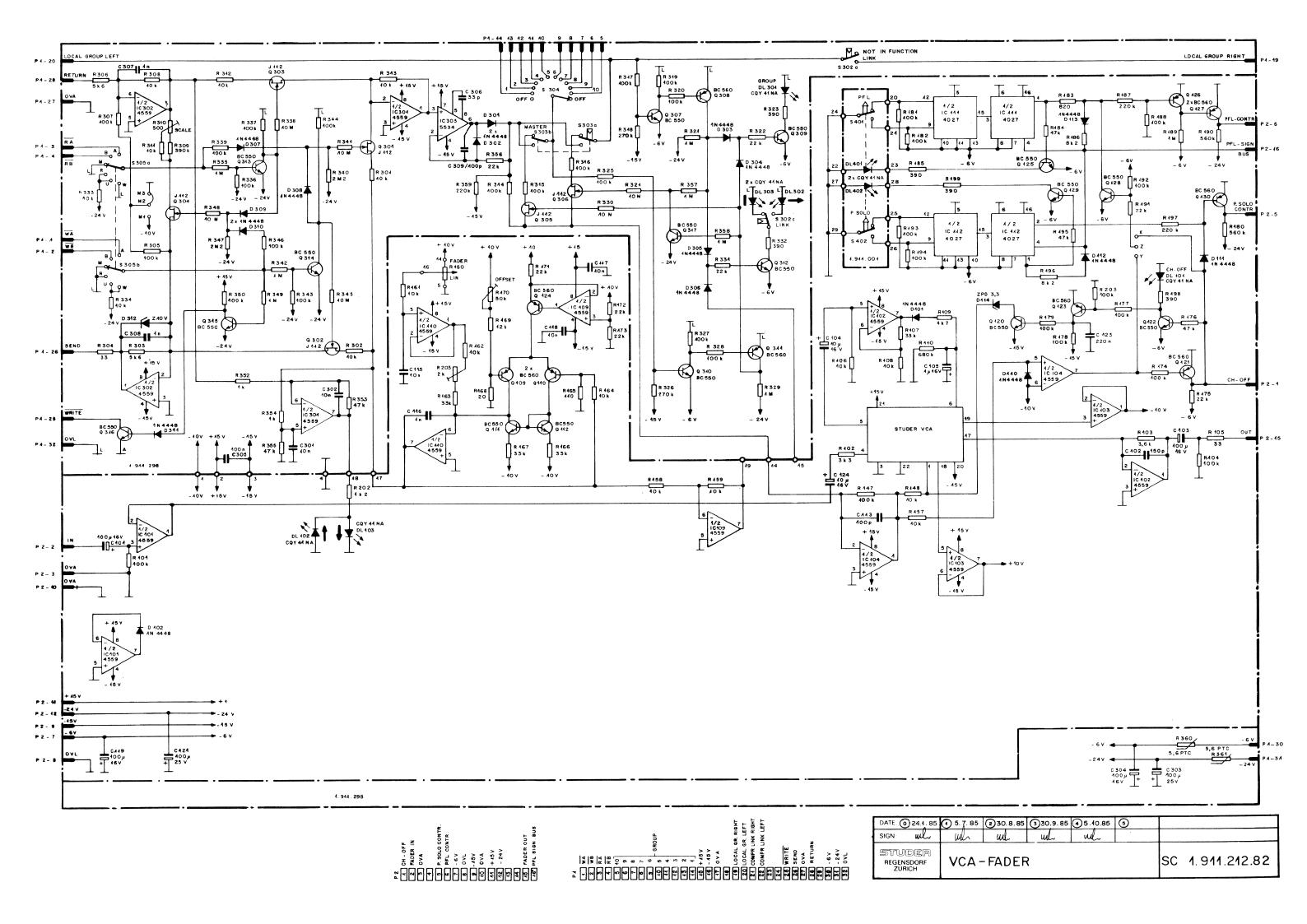


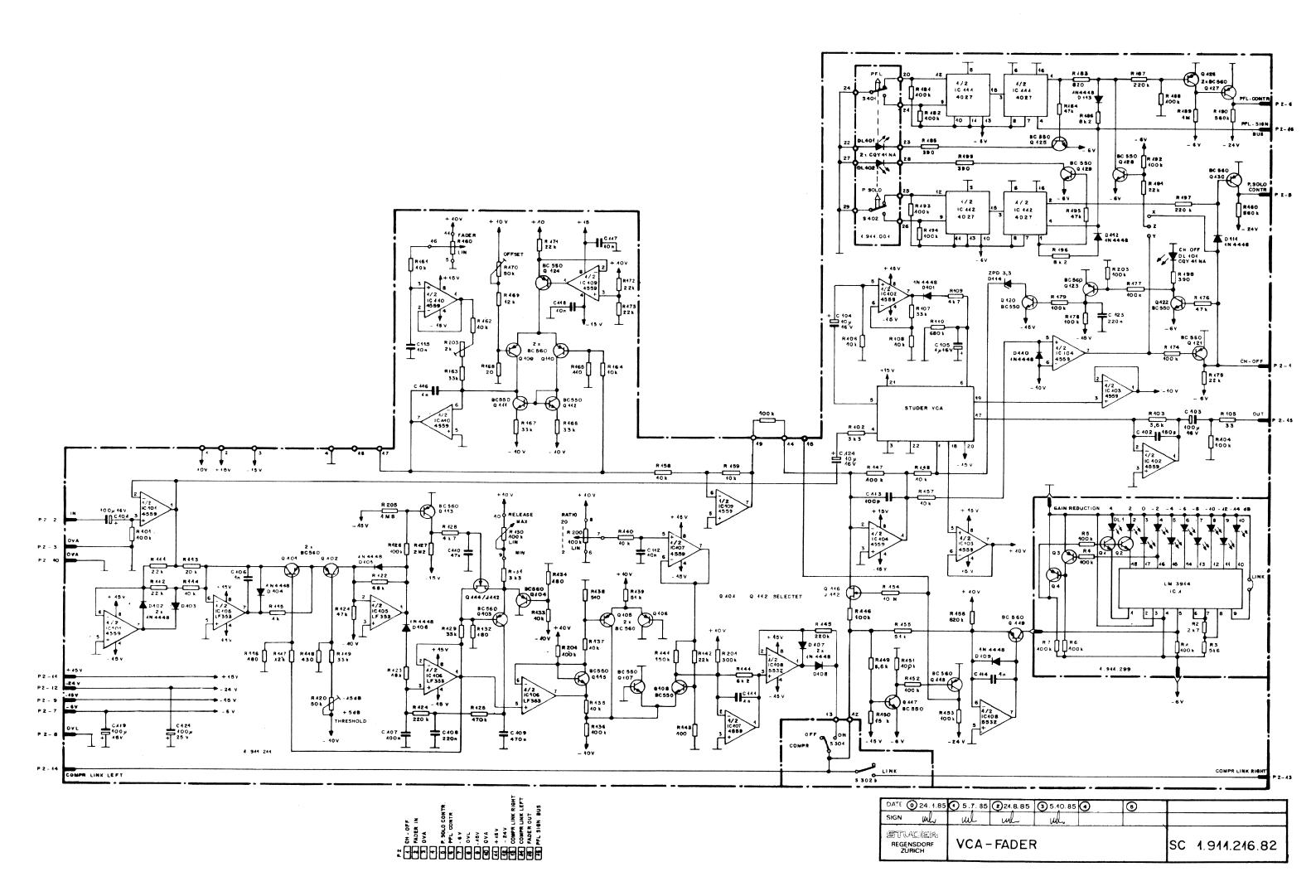


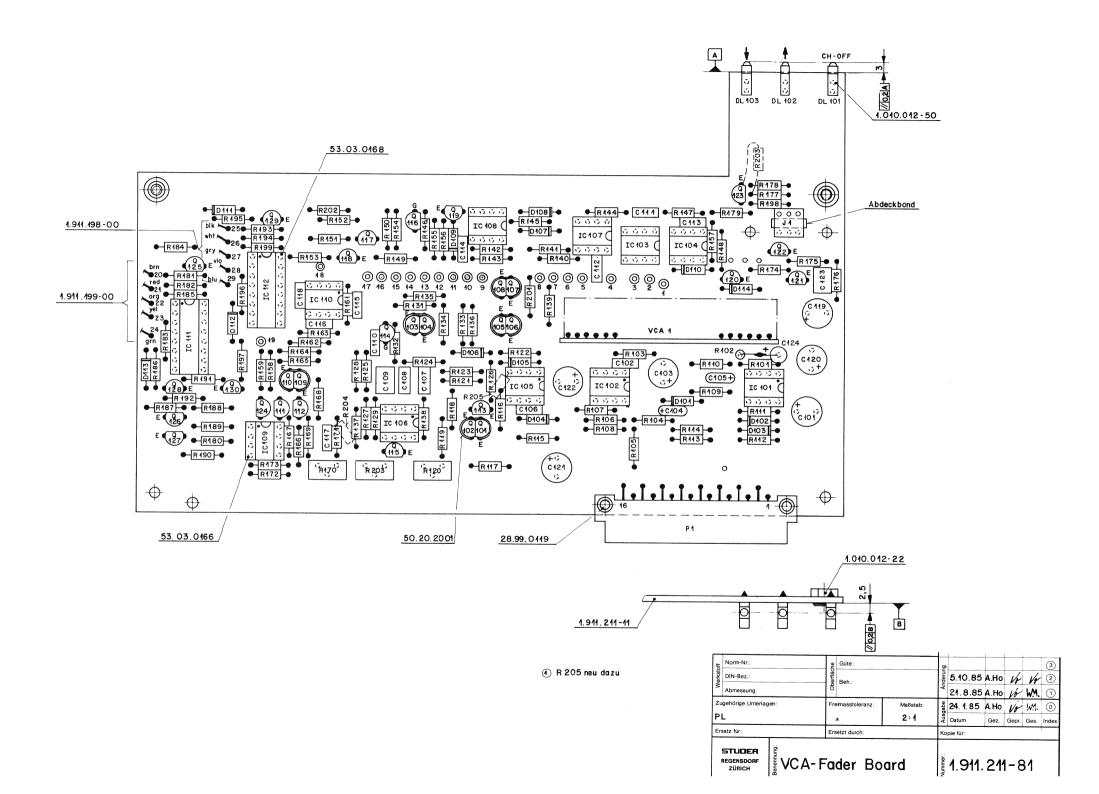












IND	POS NO	PART NO	VALUE	SPECIFICAT	IONS/EQUIVALENT	MFR	IND	POS NO	P.A	ART NO	VALUE	L	SPECIFICATIONS	EQUIVALENT
	C 101	59.22.410		16 V	EL			IC104		09.0101				
	102	59.34.415	1150 p		CER			107	50.	09.0107	RC4559			
П	103	59.22.410	1100 u	16 V	EL			108	50.	09.0105	NE 5532			
	104	59.26.210	0 10 u	16 V	SAL			109		09.0107				
П	105	59.26.910	9 1 u	16 V	SAL			110	50.	09.0107	RC4559			
П	106	59.06.010	2 1n		PETP			444	50.	07.0027	MC·14027			
П	107	59.06.510	4100n		PETP			112	50.	07.0027	MC14027			
	108	59.06.522	4220n		PETP									
	109	59.06.547			PETP] 1	54.	01.0287	3 POL	CIS		
	110	59.06.047	3 47n		PETP									
	111	59.06.010	2 1n		PETP					.038.50		SEI		
	112	59.06.010			PETP					.038.50		SEL		
	113	59.34.410			CER					.038.50		SEI		
	114	59.06.010			PETP					.038.50		SEI		
	115	59.06.010	3 10n		PETP		L			.038.50		SEL		
	116	59.06.010	2 1n		PETP					0.038.50		SEL		
	117	59.06.010	3 10 n		PETP		L	107	1.010	0.039.50	BC 550	SEL		
	118	59.06.010			PETP					.039.50		SEI		
	119	59.22.410	1 100 u	16 V	EL			109	1.010	.038.50	BC 560	SEL		
	120			not used						.038.50		SEI		
	121	59.22.510	1/100 M	25 V	EL			111	1.010	0.039.50	BC 550	SEI		
	122			not used				112		0.039.50		SEI	-	
	123	59.06.522	4220n		PETP			. 113		03.0515				
3	124	59.26.210	0 10 д	16 V	SAL			114		03.0350				
							L	115		.039.50		SEI		
	D101	50.04.012						116	50.	03.0350	J 112			
	102	50.04.012					L	117		03.0436				
	103	50.04.012	5104448					118		03.0515				
	104	50.04.012					L	119		03.0515				
	105	50.04.012	51114448				L	120	- 50.	03.0436	BC550			
IND	DAT	E NAME	1				IND	DAT	E	NAME '	L			
•							0							
3	5.10.						3			A.H-			· · · · · · · · · · · · · · · · · · ·	
2	21.8.	85 Km					2	21. 8.	85	W.				
0	5.7.	85	4.				0	5.7.		G/G				
0	24.Jar	. 85 W. Mark					0	24.Ja	n.85	W.Markl				
					011 011 01	1 -				VO.1 F15	CD 0040		1	244 04

PL 1...91.1...21.1...81 PAGE .1. OF .7.

IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	D106	50.04.0125	1N 4448		
	107	50.04.0125	1N4448		
	108		1N4448		
	109	50.04.0125	1N4448		
	110	50.04.0125	1N4448		
	111	50.04.0125	1N4448		
	112	50.04.0125	1N4448		
	113		1N4448		
	114	50.04.1107	D 3.3V		
Ŀ					
					Ī
_	DL101		CQY41AN	LED RED	
_	102	50.04.2121	CQY41AN	LED RED	
<u> </u>	103	50.04.2121	CQY41AN	LED RED	
_			,		
<u> </u>					
<u></u>	IC101				
-	102				
<u> </u>	103	50.09.0107	RC4559		
_	104				
	105	50.09.0101	TL072		

STUDER VCA-FADER BOARD

IND	DATE	NAME	i .			
④						
3	5.10.85	A.10-				
@	24. 8. 85	1/2				
	5.7.85	49				
0	24.Jan. 85_	W. Mark				
g	TUDER	_VCA-FAD	ER_BOARD	PL	19.1.12.1.181	PAGE 2 OF 7

IND POS NO		PART NO	VAL		<u> </u>	PECIF	ICATIO	ONS/E	QUIVA	LENT		MFR
Q 12'		.03.0515										
122	50	.03.0436	BC 55	0								
123	50	.03.0515	BC 56	0							~	
124	50	.03.0515	BC 56	0								
125	50	.03.0436	BC 55	0								
126	50	.03.0515	BC 56	0								
127	50	.03.0515	BC 56	0								1
128	50	0.03.0436	BC 55	0								
129	50	.03.0436	BC 55	0								
130		.03.0515										
P	54	11.2007	2 * 8	PIN								
R 10	. 57	. 11 . 4104	100	K								
102	57	.11.3362	3.6	K								
103		.11.4332		K				-				
104	57	.11.4104	100	K								
105	57	.11.4330	33									
106	57	.11.4103	10	K	,							
107	57	1.11,4333	33	K								
108	57	.11.4103	10	Κ								
109			4,7	K								
110				K								
111			22	K								
112			22	K								1
113			20	K								
114			10	K								
115	57	.11.4102	1	K								
116												
117	57	.11.4123	12	K								
IND DA	TE	NAME										
9												
	. 85	A.Ho										
	3.85	· by										
	. 85											
<u>0 24.Je</u>	<u> 28.01</u>	_W.Markl_										
CESTON DICE		YCA CAC		~ 1 0	_	2	١		014	94	1	

PL 1..9.1.1...21.1...81 PAGE .3 OF .7.

PL 11.19.11.11.12.11.11.81 PAGE 4. OF 17.

_VCA-FADER_BOARD

STUDER

STUDER

VCA-FADER_BOARD_

MFR

IND POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
R 118	57.11.3431			
119	57.11.4333	33 K		
120	58.01.9503	50 K	TRIM PMG	
121	57.11.4473			
122	57.11.4683	68 K		<u> </u>
123	57.11.4183	18 K		
124	57.11.4224			
125	57.11.4474			
126	57.11.4104			
127	57.11.5225			
128	57.11.4472			
129	57.11.4333			
130	58.03.0104	100 K	LIN POT PCC (on 1.911.210)	
131	57.11.4332			_
132	57,11,418	180		
133	57.11.4103			
134	57.11.418/			
135	57.11.4103			
136		100 K		_
137	57.11.4103			
138	57.11.351			_
139	57.11.3513			
140	57.11.4103			
141	57.11.415			_
142	57.11.422			
143	57.11.410			
144		26,2 K		
145		4220 K		
146				
147	57.11.410	4100 K	<u> </u>	

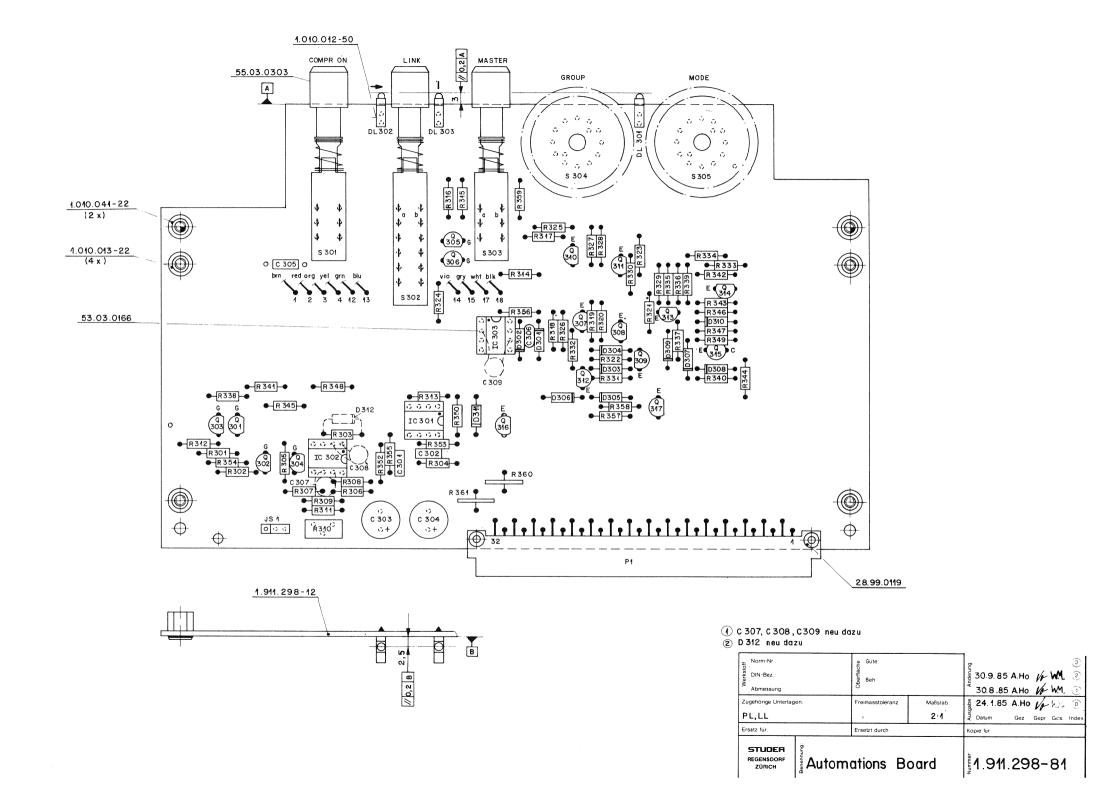
IND	DATE	NAME				
(4)						
3	5.10.85	1.11				
2	21. 8.85	V.				
0	5. 7. 85	Ja				
0	24.Jan. 85	W.Markl_				
S	TUDER	_VCA-FADE	R_BOARD	PL	19.1.12.1.181	PAGE .5. OF .7

IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	R148	57.11.4103	10 K		
	149	57.11 4562	5,6 K		
	150	57.11.4153	15 K		
Г	151	57.11.4104	100 K		
	152	57.11.4104			
	153	57.11.4104			
	154		-10 M		
	155				
	156				
	157				
	158	57.11.4103			
	159	57.11.4103	10 K		
1	160			FADER TRACK LIN.	
	161		10 K		
2	162				
	163	57.11.4333	33 K		
	164	57.41.4104			
	165	57.11.311/			
	166				
	167		33 K		
	168	57.11.3200			
	169	57.11.412	3 12 K		
	170			TRIM PMG	
	171		3 22 K		
L	172	2 57.11.422	3 22 K		
	173		3 22 K		
	174				
	17:				
	170				
L	17	7 57.11.410	4100 K		

IND	DATE	NAME				
4						
3	5.10.85	A. Ko-				
(2)	24. 8.85	The state of the s				
0	5.7.85	la				
ĬŎ	24.Jan.85	W.Markl				
	<u> </u>		ED BOARD	PI	191.1 2.11 81	PAGE 6 OF 7
	TUDER		ER BOARD	PL	191.1 2.1.1 81	PAGE 6 OF 7

IND	POS NO	PART NO	VAL	UE	SPECIFICATIONS/EQUIVALENT	MFR
	R 178	57.11.4104		K		
	179	57.11.4104	100	K		
	180	57.11.4564	560	K		
	181		100	K		
	182	57.11.4104	100	K		
	183	57.11.4821				
	184	57.11.4473		K		
	185	57.11.4391				ļ
	186	57.11.4822		K		
	187	57.11.4224		K		<u> </u>
\perp	1 88	57.11.4104		<u>K</u> _		ļ
	189	57.11.4105		M		-
<u> </u>	190			K		-
	191	57.11.4223		K		-
-	192			K_		
-	193			K		-
-	194	57.11.4104		K		-
-	195	57.11.4473		K		+
-	196	57.11.4822		K		
-	197	57.11.4224 57.11.4391				-
-	198	 				+
-	199			Κ	LIN POT PCC (an 1.911.210)	+
-	200	57.11.3304		K	LIN FOT FCC (01 1.511.210)	-
-	202			K		+
-	203			K		+
-	204					
-	VCA1				STUDER VCA	+
2	205	111111111111111111111111111111111111111		М	OTOBER 70/1	1
+	MPQ				CLIP, 2 * TO 92	

IND	DATE	NAME				
(4)						
3	5.10.85	A.Ho-				
2	24.8.85	V.				
0	5.7.85	94				
0	24.Jan.85	W.Markl				
S	TUDER	_VCA-FADI	ER_BOARD	PL	<u>19.1.12.1.1</u> 81	PAGE 7 OF 7.



	os no		PART N)	VALUE		PECIFICATI	ONS/EQUIVA	LENT	MFR
	301				10 n		PE	TP		
	302	59	.06.	0103	10 n		PE	TP		
	303	59	. 22.	5101	ىر 100	25 V	/ EL			
	304	59	. 22.	4101	100 ju	16 \				
	305	59	.06.	5104	100 n			TP		
	306	59	.34.	2330	33 p		CE	:R		
1	307 308	59 59	. 32. . 32.	2330	1n 1h		CE CE	K K		
1	309	59	. 34.	4101	100 P		CE	₽R		
	7304	50	.04.	0125	1N4448					
	302	50	. 04.	0125	1N4448					
	303	50	.04.	0125	1N4448					
	304	50	.04.	0125	1N4448					
	305	50	.04.	0125	1N4448					
	306				1N4448					
	307				1N4448					
	308	50	.04.	0125	1N 4 4 48	,				
	309	50	.04.	0125	1N 4 4 48					-
	310				1N4448					
	311				1114448					
2	312	50	.04,	1114	10 V	Z-	DIODE			
	DL301				CQY41AN		ROT			
	302				CQY41AN		ROT			
+	303	50	. 04 .	2121	CQY41AN	LED	ROT			
-	JS 1	54	11	0126	3 PIN	JUM	FER			-
	C301				RC4559		,			
	302				RC 4559					
	303	50	.05.	0243	NE 5534N					
- 1	P 1	54	.01.	0359	2×16 PIN	EUR	OCONNE	CTOR		
IND	DATE		N/	ME						
<u> </u>										
<u> </u>										
	30. Sept									
	30. Aug									
O(2)	24.Jar	1.85	W.M	<u>arkl</u>						
5	TUD	ER.	AUT	LTAMC	ON_BOARI)	PL 1.9	34.4.29.8	. 81 PAGE	1 of 4

IND POS N		VALUE	SPECIFICA	TIONS/EQUIVALENT	MFR
Q 30	1 . 50.03.0350	J112.			
30					
30.	3 50.03.0350	J112			
30	4 50.03.0350	J112			
30:	50.03.0350	J112			
30		J 112			
30					
30					
30		BC550			
310					
31					
	2 50.03.0436				
31.					
31					
31:		BC550			
31		BC 550			
31.	7 50.03.0436	BC 550			
-					
R 30					
30	01.1111100	10 K			
30:	3 0, 1, 1, 1002				
300				•	
30					
30					
30					
30					
30		390 K			
310	58.01.9501	500.	TRIMM	PMG	

HAD	DATE	NAME	l				
4							
3							
2	30.Sept.85	A.Ho-					
1	30.Aug. 85	A.Ho					
0	24.Jan.85	W. Markl					
9	TUDER	TAMOTUA	TON BOARD	PL	19.1.12	1881	page 2 of 4

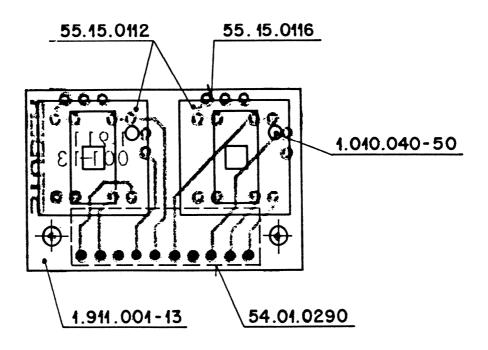
IND	POS NO		PART NO	VAL	UE		PECIF	ICATIONS	/EQUIVAL	ENT	1	MFR
	R 311	.57	.11.4103	10	K							
	312	. 57	.11.4103	10	K							
	313	.5.7	.11.4103	10	K							
	314	57	.11.4104	100	K							
	315	57	. 11. 4104	100	K							
	316	57	. 11 . 4104	100	K							
	317	57	.11.4104	100	K							
	318	57	. 11 . 4274	270	K							
	319	57	. 11 . 4104	100	K							
	320	57	.11.4104	100	K							
\square	321	57	. 11 . 4105	1	<u>M</u>					····		
	322	57		22	K							
	323	<u>57</u>	. 11 . 4391	390								
\sqcup	324	57		10	M							
\sqcup	325	57		100	K							
Ш	326	57		270	K							
\sqcup	327	57	<u>.11.4104</u>		<u>K</u>							
\sqcup	328	57		100	K							
	329	57	. 11 . 4105	1	M							
\vdash	330	57	<u>.11.6106</u>		M							
\sqcup	331	. 57	<u>. 11 . 4223</u>	22	K							
	332	. 57	.11,4391	390					****			
\vdash	333	57	.11.4103	10	<u>K</u> _							
\vdash	334	5.7	.11.4103	10	<u>K</u> .							
\vdash	335	57	.11.4105	100	M							
\vdash	336	57	<u>.11.4104</u>	100	K_							
H	337	57	.11.4104	100	K	ļ						·
	338	57	.11.6106	10	M							
	339	.1.57		100	K							
	_340		115225	4.2	_ ^ _	İ						
IND	DAT	E	NAME	-								
	7.A^-C-	, 0,-										
	30.Se	pt.85	A.Ho-	<u> </u>								
101	30,Au		A.Ho- W.Markl	<u> </u>								

IND	POS NO		VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	R 344		10 M		
	342	57.11.4105			
	343	57.11.4104	100 K		
	344	57.11.4104	100 K		
	345	57,11.6106	10 M		
	346	57.11.4104	100 K		
	347	57.11.5225			
	348	57.11.6106	10 M		
	349	57.11.4105	1 M		
	350	57.11.4104	100 K		
	351				
	352	57.11.4102	1 K		
1	353	57.11.4473	47 K		
	354	57.11.4102	I K		
1	355	57.11.4473	47 K		
	356	57.11.422 3	22 K		
	357	57.11.4105	1 M		
	358	57.11.4105	1 M		
	359	57.11.4224	220 K	·	
	360	57.99.0209	5,6	PTC	
	361	57.99.0209	5.6	PTC	
		-			
	S 301	55.15.0002	2*U	TASTE	
	302	55.15.0004		TASTE	
	303	55.15.0002	2 * U	TASTE	
	304	55.13.0011	1 * 12	SCHALTER U	
	305	55.13.0010	2 * 6	SCHALTER KS	
					- T

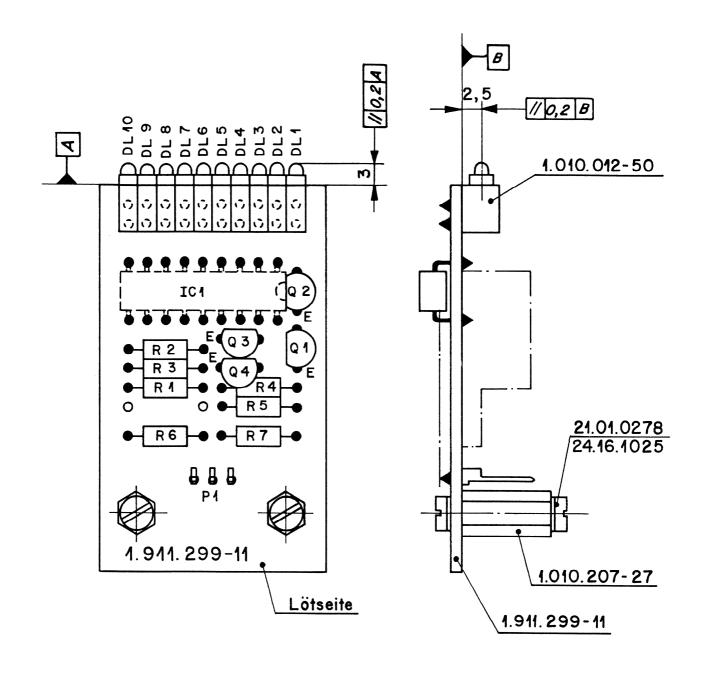
STUDER AUTOMATION BOARD

PL 1...911.1...298...8.1 PAGE 3. OF 4

ND	DATE	NAME	I			1
(
3		-				
2	30.Sept.85	A.Ho-				
Θ	30. Aug. 85	A.Ho-				
\circ	24Jan.85	W.Markl				
9	TUDER	_AUTOMAT	10N BOARD	PL	19.1.129.8.81	PAGE 4 OF 4



#	Norm-Nr.:		he	Güte:		O C					3
Werkstoff	DIN-Bez.:		Oberfläc	Beh.:		Ånderur					2
×	Abmessung:		ð	Den		Ā					(I)
Zu	gehörige Unterlag	en:	Fre	eimasstoleranz:	Maßstab:	appe	19.5.82	Но	Vr		0
				±	2:1	Ausg	Datum	Gez.	Gepr.	Ges.	Index
Ers	satz für:		Ersetzt durch:			Ko	pie für:				
1	REGENSOORF ZÜRICH			ton Boo	ard N-N	Nummer:	1.911.	OC)1-(00)

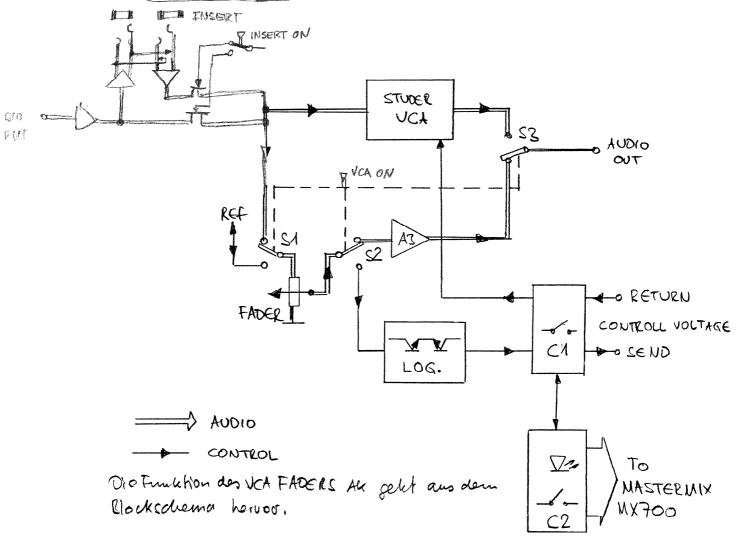


\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Norm-Nr.:		o Güte:		Вu					(3)
erksto	DIN-Bez.:		Dop.		deru					2
3	Abmessung:		qO		Än					1
Zι	igehörige Unterlag	jen:	Freimasstoleranz:	Maßstab:	gabe	14.7. 83	A.Ho	Vr	ŀM.	0
P	L		±.	2:1	Ausc	Datum	Gez.	Gepr.	Ges.	Index
Er	satz für:	*	Ersetzt durch:			pie für:	***************************************			
	STUDER REGENSDORF ZÜRICH	Benefind September 1	RM Boar	d	Nummer:	1.911	. 29	99-	.00)

IND	POS NO	PART NO	VALUE	SP	ECIFICATIONS/EQUIVALENT	MFR
	DL 1	50.04.2132	CQY73N	LED	GREEN	
	2	50.04.2132	CQY73N	LED	GREEN	
	3		CQY73N	LED	GREEN	
	4	50.04.2121	CQY41NA	LED	RED	
	5	50.04.2121	CQY41NA	LED	RED	
	6	50.04.2121	CQY41NA	LED	RED	
	7	50.04.2121	CQY41NA	LED	RED	
	8	50.04.2121		LED	RED	
	9	50.04.2121		LED	RED	
	10			LED	RED	
	IC 1	50.11.0119	LM 3914			
	Q 1	50.03.0436	BC 2 3 7			
	2	50.03.0436				
	3	50.03.0515				
	4	50.03.0515				
	R 1	57.11.4104	100 K			
	2	57.11.4272				
	3	57.11.4562				
	4					
	5	57.11.4104				
	6	57.11.4104				
	7	57.11.4104			W 5 11 11 11 11 11 11 11 11 11 11 11 11 1	
	/	37.71.710	100 1			
	P 1	54.01.0313	3 PN			
	1 1	31.01.0313	J 1 OL			
H						
IND	DA	I NAME				

IND	DATE	NAME					
4							
3							
2							
0							
0	26.10.82	W.Markl					
5	TUDER	LED-GAIN-	REDUCTION-METER	PL	1.911.299.0	00 PAGE 1	of 1

Blockschalfbild

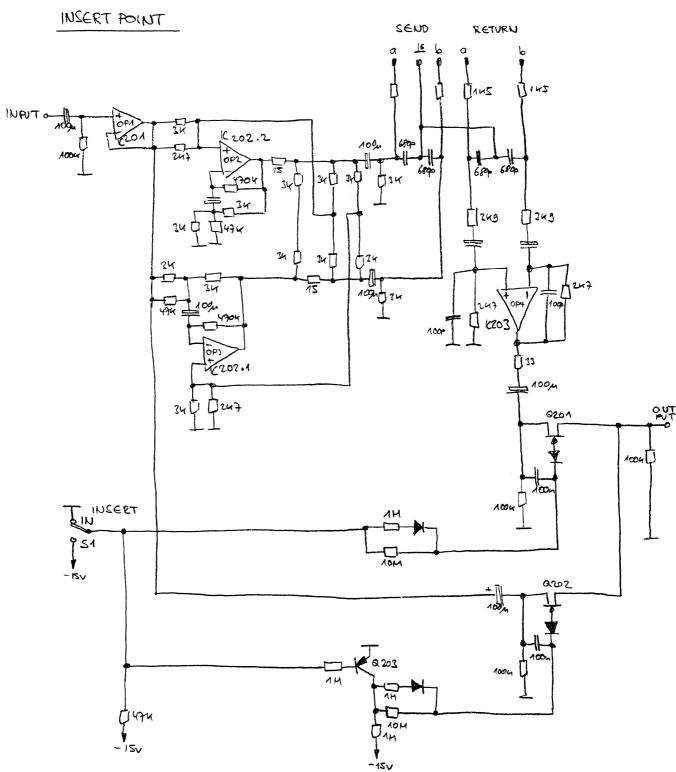


Funktionsbeschreibung

Das Andiosignal planel über A1, einem Symmetrierer, auf den Insertpunkt INSERTund von dort zurick auf den Symmetrieren Ginzung
A2. Dessen Aufang speich den STUDER-UCA und bei sezeichneter
Schaltersklung von S1 den FADER. Das Signal gelangt num
vom Faderabgriff über Schalter S2 auf den Verstärker A3 über
S3 auf den Ausgang.

Bei der anderen Schaetestellung wird das Audiosignal vom ausgang des VCA auf den Avoio-Ausgang pleitet.

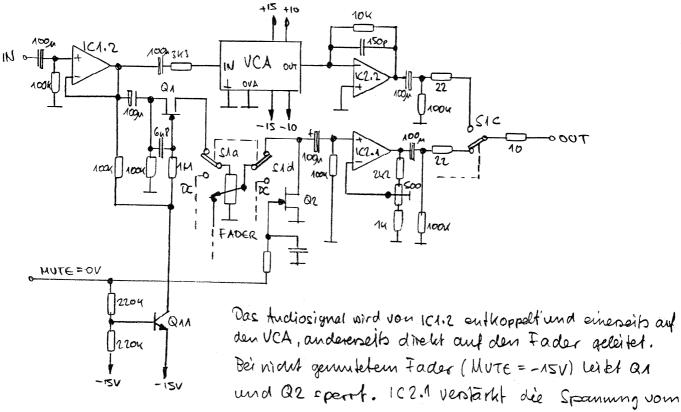
Der Fader Wird dann mit einer Referenzspanning gespiesen. Dre Spanning am Schleifer wird über einen Logarhyllmierer LOG der Konnlinie des UCA amsepasst. Diese Steuenspanning wird nun über einen Analogschalter C1 auf das Automationssystem gesendet. Von dort gelangt es zurück über C1 auf dem VCA.



Das Audiosignal wird nit OPA (ICRON) gepuffert an den Symmetriervantiker OPZ (OP3 (ICROZ) und den Schalterfet QZOZ geliefert. Wenn der Schalter INSERT IN geschallt ich, leitet QZOZ das Andiacignal zum Ausgang. Das symmetrische Signal Kommt vom Insertpunkt auf den Symmetrischen Ginzang RETURN zurnck und wird mit dem OP4 (ICZOZ) entkorpett. Ich der Schalter INSERT IN nicht betätigt, leitet QZO1 das Rehim-Signal zum Ausgang, während QZOT spert.

Damit das Umschalten knockfrei erfolgt, werden die Feb jeweils rasch eingeschaltet und langam ausgeschaltet.

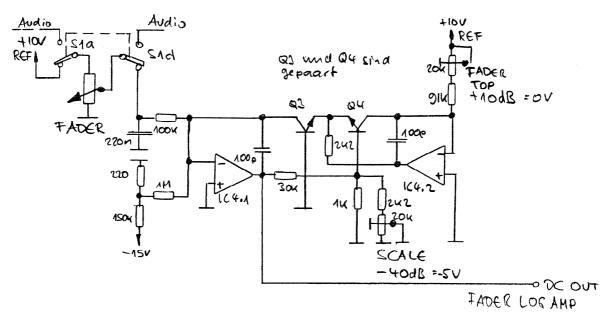
FADER und UCA



Schleißer und sendet diese über den Schalter SIC an den ausgang OUT. Wird hingegen SI gedrückt, dann gelauft das andiosignal vom ausgang des UCA über 162.2 an den Schalter SICzum ausgang OUT. In diesem Zustand ist 162.1 mit dem 100kl Widerstand am Einzang gegen Masser gescheefet. Der ausgang bleibt unbelaskt.

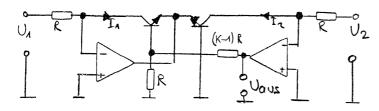
Wird die MUTE Leitung = OV, dann leikt Q2 und Q11. Q11 legt somit eine nesahire Spannung and das Gate von Q1, so dass dieser spert. Der Fader ist sonif absekoppelt. => MUTE

LOGARHYTMIERER



Wenn der Schalter SI gedrücht ist, dann wird über SI a eine Referenzspanning von +10V an den FADER gelegt. Die ausgangsopannung des
Fader gelangs dann über SI d auf den Logarhythmiserer. Der
220nF Kondensator an densen Gingeng glättet die DC-Spannung
die der Fader liefert von Störungen die beim Betätigen entstehen
Können.

Die nächste Obbildung weigt das Prinzipschaltbild imes Losanthmireners.



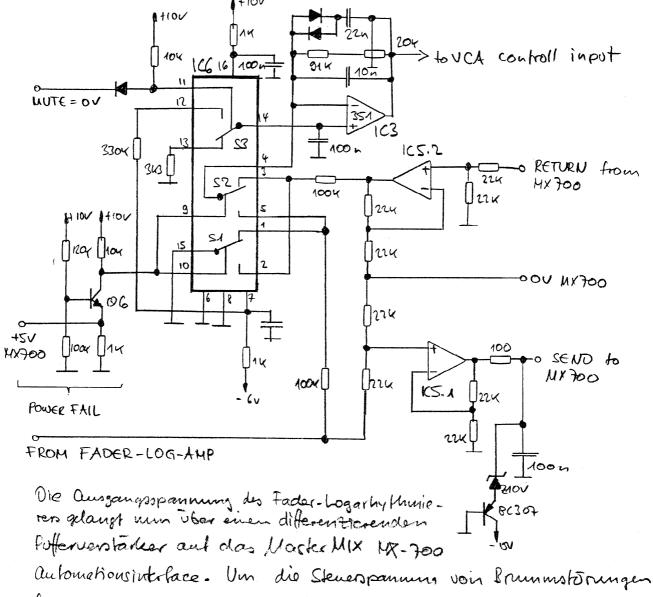
Die aussausppaumung folgt der Gleichung

$$U_{aus} = -k \cdot U_T \cdot ln\left(\frac{U_A}{U_2}\right)$$

Beim Logarythinicrer im VCAFACER All ist non Un = +10V die Referenzspanning. Da die temperaturabhängige Spanning Un einen Fehler bei Temperaturanderungen verwoacht, wird die Referenspanning daru umgekehrtproportional temperaturabhängig gemaant. Otes kompensiert diesen Fehler.

Damit nun, wenn der Fader gegen - Deingskellt ist, die ausschaltdampfung sicher erreicht wird, wird eum Eingemapstrom noch ein kleiner negativer Beitrag hinzugefügt. Dres bewirkt bei ca. -60dB ein sicheres ausschalten des Logartythmierers.

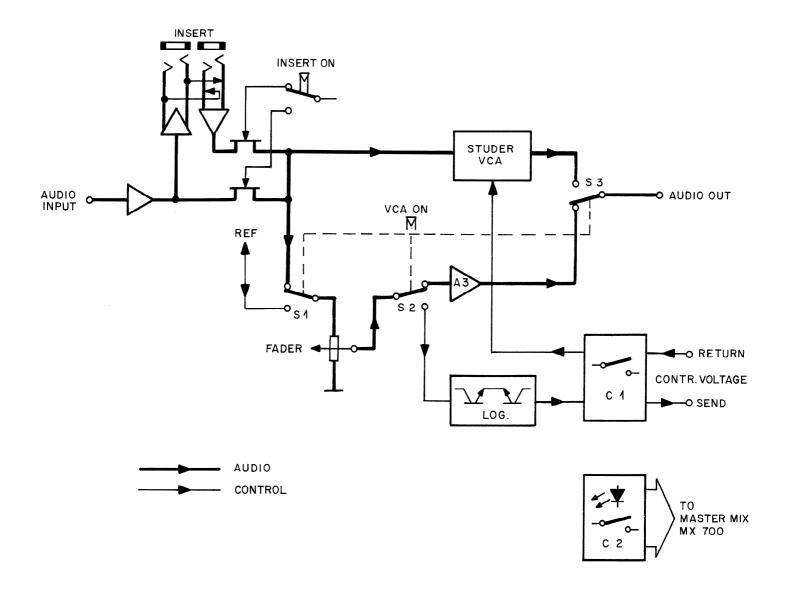
Analogsdualter und Automation



autometionsintrace. Um die Skuerspannung von Brummstörungen freituhalten bringen wir sie mit OPAMP 1C5.1 und 1C5.2 differentiell tur Masse des luterfaces. Somit findet keine Massenverkopplung von Pult und Automationssystem statt.

Das MX 700 luterface liefert im eingeschalleten Eustand eine Speisespannung von + SV. Mit Q6 wird num laufend die Speisespannung überwacht. Wonn diese num unter 4V sinkt, leitet Q6 und schalter über Pin gund 10 von 1C6 die Schalter SI und 52 um. Dies bewirkt, dass die Spannung vom Return-Einemg mit SI gegen Masse geleitet und die Fader-Steneppannung direkt über S2 zum VCA geleitet wird.

S3 des Analogschalter 166 dient zum Muten. Wenn der Hwte-Einsams auf Mosse sozegenwird (MVTE=OV), dann Schalter S3 den nichtinvertierenden über den 33 achtwidestand auf -6V. Durch diesen Widerstand wird die Austiepsgeschwindigken aun +-Ensams von 163 mit dem 100 nf Kondensator begrenzt. Wenn die Mute-Leitung wider +100 wird, wird der 100 nf-Kondensator nun über 53 und dem 3,3KR widerstand entladen. 163 arbeitet wieder als normaler Invertierender Verstärker.



VCA Flachbalen vegler (AK)

Her VCA Flachbalennegtr 1,2M,221 wind zusammen

mit dem Andrio Kinetiks Mastermix h Antomations system

eingeselft. Die Kombination von Madermix MX644 mit

Eingangs hanalen MMK 742 (42 Eingange) oder MMK 764

(64 Eingange) und einer entsprechenden Am zahl

von VCA Flachbarmeglern 1.911.221 wlautt

das Computer unterstützte Abmischen von Time coode

synchronisierten Anfrahmen und die unbegrenzte

Jouppen bildung über das digitale Grouping.

Bedienn gretenerhe

INSERT IN schalbet den symmetrischen Einschleifgrunket Vor dem Flachbalm ne gler ein. Bei fansgeschalbetem Einschleiffrunkt I wicht gedundeler Taske Aleht das vor dem Flack Regler anliegende Andies ignal Signal troky als Direkhausgang troky dem zur Darfugung

VCA Ty Bei nicht gedmochter VCA IV-Toeshe wird der

VCA Regler vang angen und das Andio-Signal

direct uber den Flachbahn vegler gefüllich

Bei gedwochter Toeshe wird das Andio-Signal

über den VCA gefüllicht den Flach bahn negler

ließest die Stenenspanning für den VCA

resp oder word dass Mashennip System

CH off LET zeigt en, venn der Kanal ansgeschaltet ist (geschossenen Kogler, geschlossene Gruppe, thathe signal

do drei LETT zeigen am, ob die Reglerstellung der vom Mashemmix geliefenden Shenenspanning entspriidh oder zu klein reep zu gwors ist group tooke

Tooke + LEI blankt die gruppenbilding when das Machanine System

WRITE

Torgle + LED Bringt den Kanal von Read" (uleeniant Themspermy of von Artomations - System im WRITE (Bhenenspanning des Flachbahmneglass

wird vom A-System rebennamen, Merminut stain woomen to top &

Enmal

Zweimal Zuchen uleumin & Zwanczs wei 32

ISOLATE

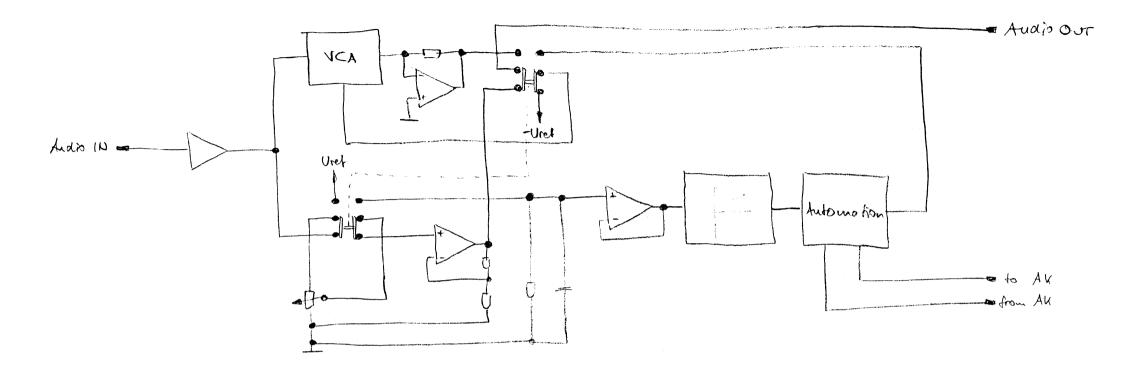
Toughe + LED. Murch Dundren die ser Taske kann die Flachbalmeglereinheit vom Aubornahions- system abligheremb werden. Regelandeningen um Reglev wirken sich width mehr and das Haalen this sight and den Componher oms

UPTATE

Tack + LED Enlands das whenimh vel your warmalen Tadevert.

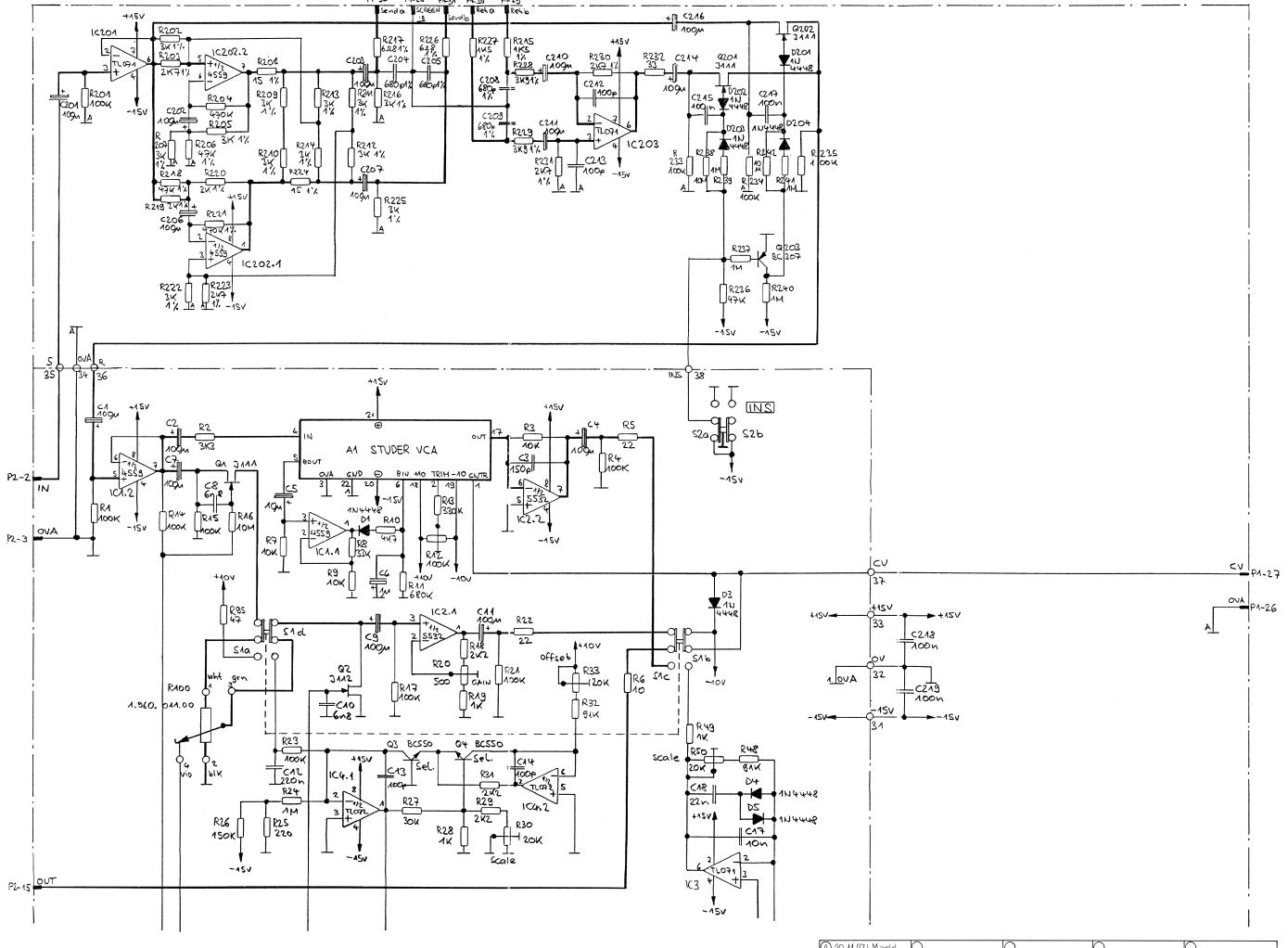
Mule write System wherein the woode

Mule

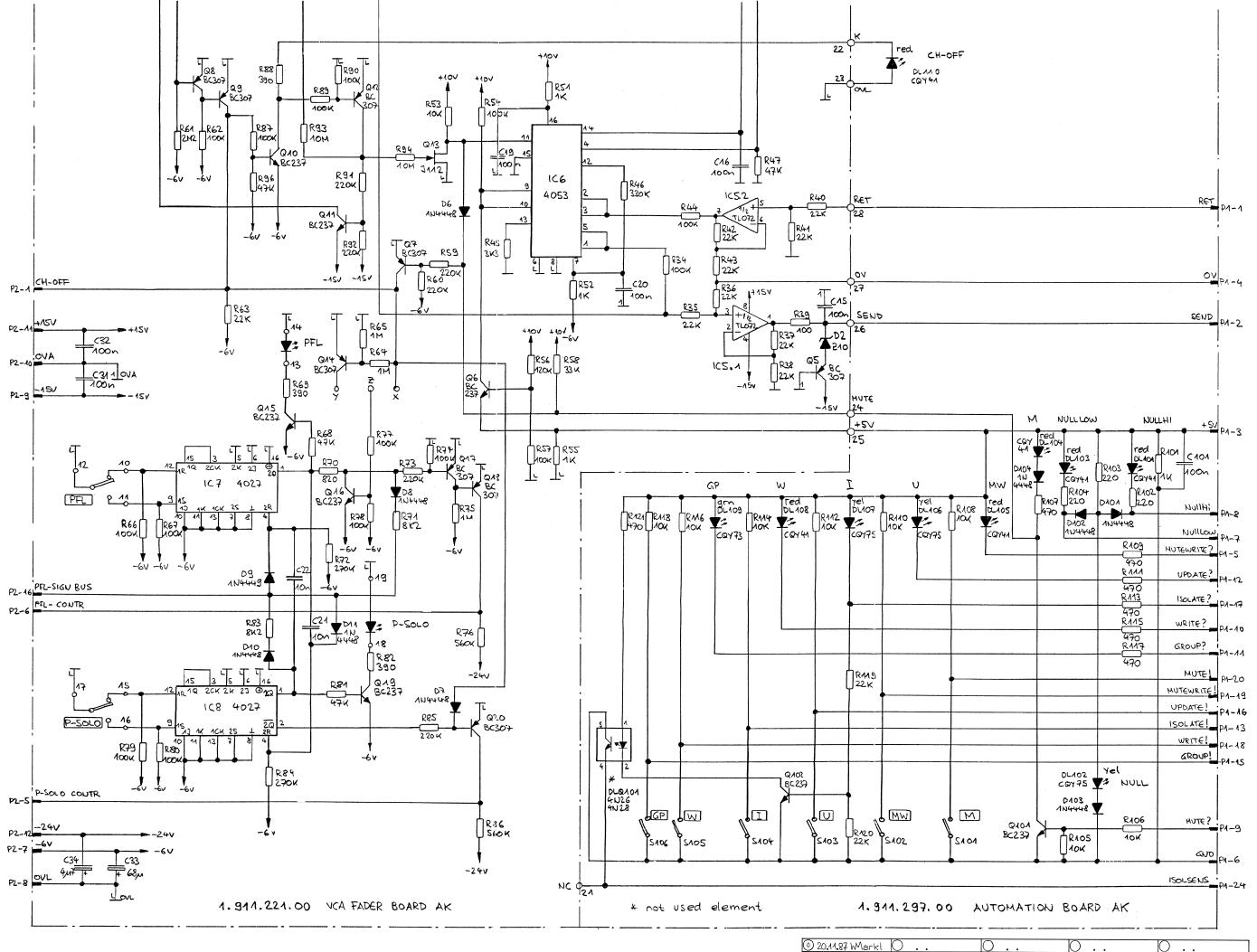


Block-Schema

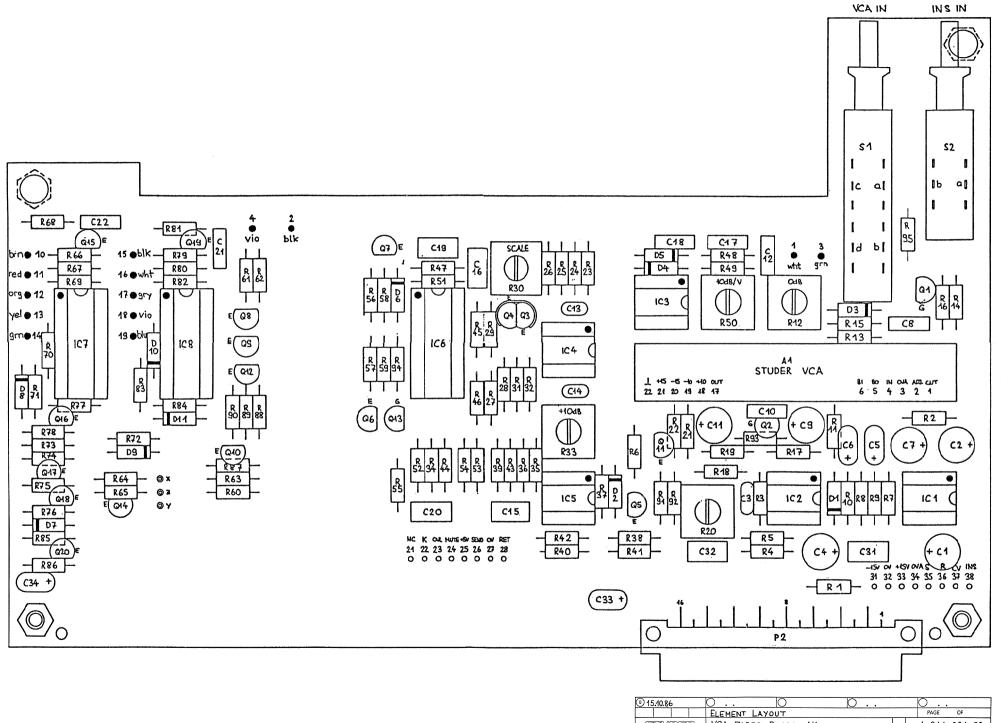
VCA-Fader AK 5.aug. 85mm



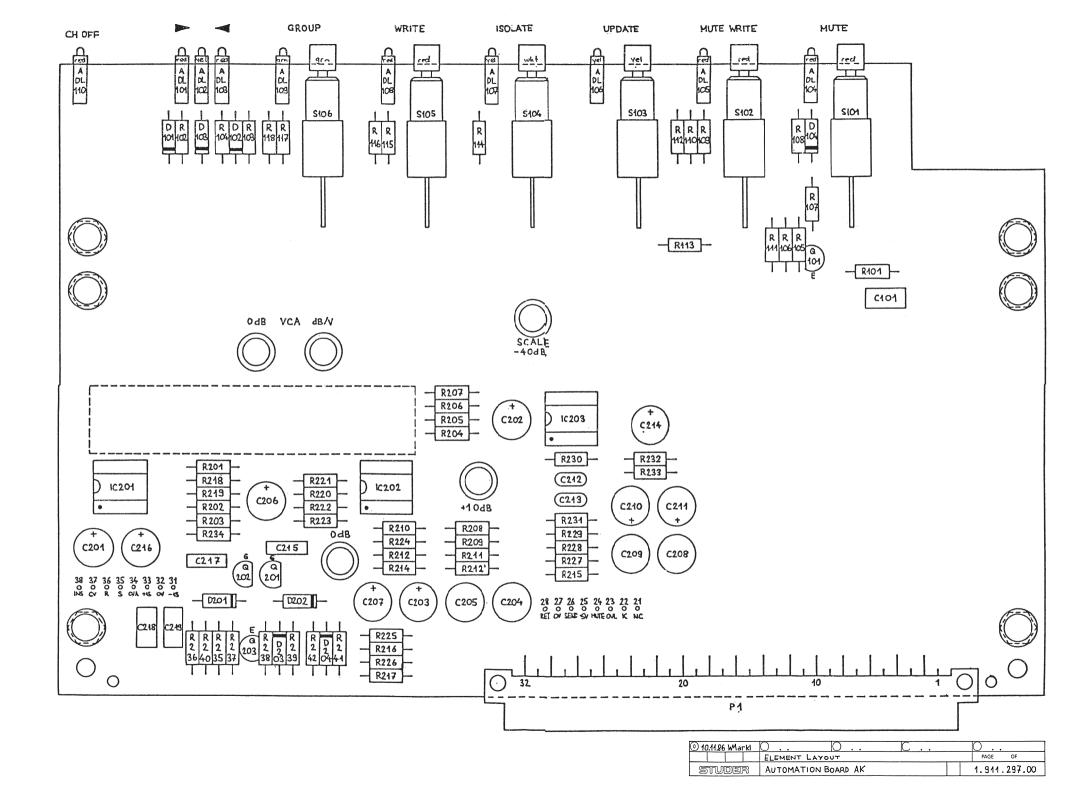
@ 20.11.87 WMarkl	0	O	0	0
				PAGE 1 OF 2
STUDER	VCA FADER AK			1.911.220.00



0 20.11.87 Warkl	0 0	0	• •	0
	•			PAGE 2 OF 2
STUDER	VCA FADER AK			1.911.220.00



15.10.86	0 0	0	0
	ELEMENT LAYOUT		PAGE OF
STUDER	VCA FADER BOARD	AK	1.911.221.00



KAPITEL 5: Einschub-Module der Eingangssektion 1.912. ... **INHALT** 1.* 2.* Eingangseinheiten Stereo und Hochpegel 'A'...... 1.912.240../250.. 3.* Eingangseinheiten Mono / Stereo Version 'B' 1.912.120../141... Hilfssummeneinheit......1.912.310 4. 5. 6. Monitorerweiterung (AUX Monitor)1.912.460 7. 8. Summenausgangswahl-Einheit......1.912.500 9. 10. **SECTION 5:** Plug-in Units of the input section 1.912. ... **CONTENTS** 1.* Input units mono 'A'1.912.220... 226 2.* Input units stereo and high level 'A'...... 1.912.240../250... Input units mono / stereo 'B' 1.912.120../141... 3.* 4. 5. 6. Monitor expansion (AUX Monitor)1.912.460 7. 8. Master output selector.......1.912.500 9. Monitor mixer / with EQ...... 1.912.510/511 Compact (Hex) Density Mixer......1.912.514 10.

Diese Beschreibungen werden kundenspezifisch bestückt.

^{*} These descriptions are supplied according to the customers requirements.

MONO EINGANGSEINHEIT

MONO INPUT UNIT

Die universelle Mono-Eingangseinheit ist mit vier Eingängen ausgerüstet, welche die Verarbeitung von Mikrofon bis Leitungspegel im Bereich -70 ... + 24 dBu erlauben.

Der Filter - und Equalizerteil bietet mit seinen stetig einstellbaren Höhen-und Tiefensperren und dem parametrischen 4-Band Equalizer beste Voraussetzungen zur Frequenzgang-Korrektur und auch zur Realisierung ausgefallener Klangbilder.

Auf der Ausgangsseite der Einheit stehen vier Hilfskanäle (3 Mono, 1 Stereo), das Vorhören vor dem Flachbahnregler und nach dem Panorama-Potentiometer sowie vier resp. acht Hauptausgänge (1.912.220 / 1.912.222) zu den Summensammelschienen zur Verfügung.

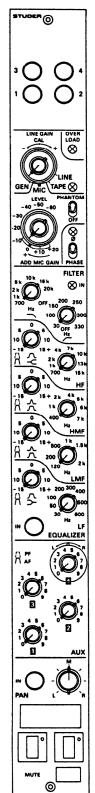
Panorama-Potentiometer, Mutetaste, Usertaste, Phantomschalter und Phasenschalter vervollständigen die Eingangseinheit.

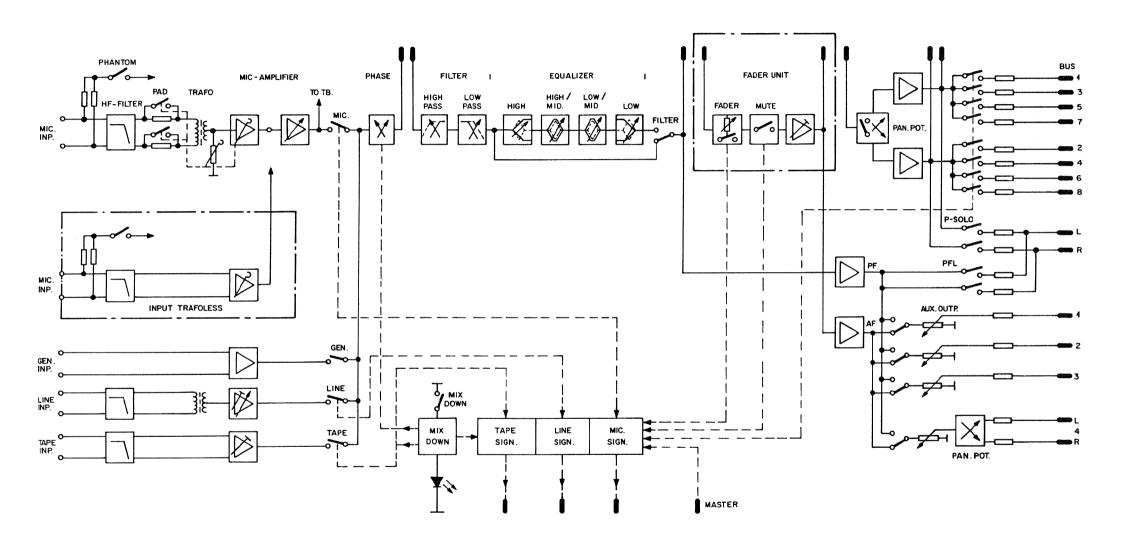
The universal input unit is equipped with four inputs which allow a range between the microphone and the linelevel of -70...+24 dBu.

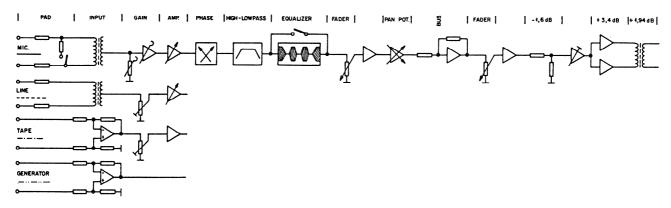
The filter and the equalizer with its continually adjustable low and high pass filters and the parametric 4-band equalizer provides assumption for correcting frequency response and realization of special tonal effects.

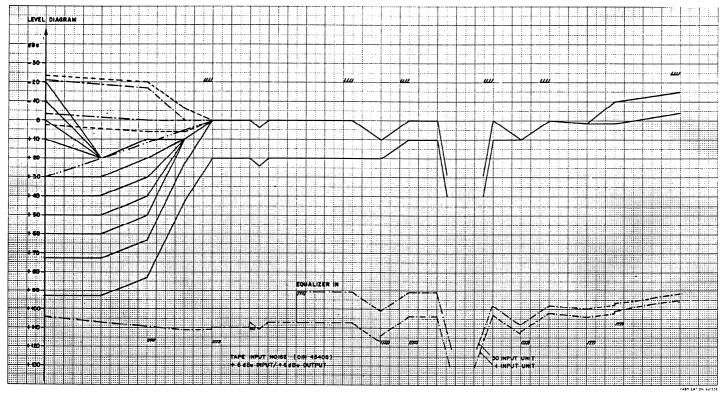
At the unit's output side there are four auxiliary channels (3 mono, 1 stereo). Prefader-listening before the fader and after the panorama potentiometer as well as four respectively eight main outputs (1.912.220/1.912.222) to the master busses are available.

Panorama potentiometer, mute switch, user push button, phantom switch and phase switch complete the input unit.



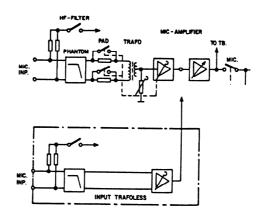






1. EINGANGSTEIL

1. INPUT SECTION





1.1 MIC EINGANG

Universaleingang, Mikrofon bis Leitungspegel, symmetrisch, erdfrei mit Eingangstransformator.

Verstärkung einstellbar mit 9-stelligem Stufenschalter in 10 dB Schritten im Bereich -60... + 20 dBu. Zusätzliche am Potentiometer stetig einstellbare Verstärkung von 0...12 dB.

Kann von extern stumm geschaltet werden (MIC CUT).

Minimaler Eingangspegel bei Normalstellung der Flachbahnregler (0 dB) -72 dBu

Maximaler Eingangspegel +24 dBu

Eingangsimpedanz bei Stellung
-20 ... -60 dBu des Pegelschalters >1,5k0hm

Eingangsimpedanz bei Stellung
-10 ... + 20 dBu des Empfindlichkeitschalter ≯ 5 kOhm

Eingangssymmetrie (-20 ... -60 dBu) $\stackrel{\triangleright}{=}$ 60 dB (+20 ... -20 dBu) $\stackrel{\triangleright}{=}$ 50 dB

Phantomstromversorgung mit Schalter 48V (auf Wunsch 12V oder 24V)

Fremdspannung bezogen auf den MIC-Eingang bei einem Quellenwiderstand Rs=200 Ohm NF≤ 4 dB

Als Option kann ein symmetrischer, trafoloser Universaleingang eingesetzt werden.

1.1 MIC INPUT

Universal input, microphone to line level, balanced, floating with the input transformer.

The gain can be adjusted with a nine-position selector switch in 10 dB steps in the range of -60...+20 dB. An additional continually adjustable gain of 0....12 dB.

Mute can be operated externally (MIC CUT).

Minimum input level at normal position $\,$ -72 dBu of the fader (0 dB)

Maximum input level +24 dBu

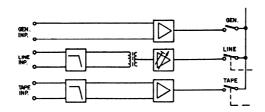
Input impedance at position -20...-60 ➤1,5 kOhm dBu of the level switch

Input impedance of the sensitivity \geqslant 5 kOhm switch in position -10...+20 dBu

Imput symmetry (-20...-60 dBu) ≥ 60 dB (+20...-20 dBu) ≥ 50 dB

Phantom current supply with switch 48 V (on request 12 V or 24 V)

A balanced, transformerless universal input can be used as an option.





1.2 LINE EINGANG

Hochpegeleingang, symmetrisch, erdfrei, auf Nominalpegel abgeglichen.

an Korrekturpotentiometer mit rastender Mittelstellung um <u>+</u>6dB veränderbar

Nomineller Eingangspegel, einstellbar + 4 ... + 16 dBu

Maximaler Eingangspegel + 24 dBu

Eingangsimpedanz ≥ 10k0hm

Eingangssymmetrie ≥ 50 dB a 30 Hz ... 16 kHz

Klirrfaktor ≤ -85dB a 30 Hz ... 16 kHz

Fremdspannungsabstand ≥ 100 dB

1.2 LINE INPUT

High level input, balanced and floating, aligned to nominal level

at correction potentiometer with framed medium position changeable by $\pm 6~\mathrm{dB}$

Nomanal input level, adjustable +4...+16 dBu

Maximum input level + 24 dBu

Input impedance \geq 10 kOhm

Input symmetry 50 dB \odot 30 Hz ... 16 kHz

Distortion -85 dB 30 Hz ... 16 kHz

Signal to noise ratio ≥100 dB

1.3 TAPE EINGANG

Trafoloser, symmetrischer Hochpegeleingang auf Nominalpegel abgeglichen. Durch externen MIX-DOWN Befehl mit Vorrang schaltbar. Gleichzeitig wird der Phaseninverter ausgeschaltet.

Nomineller Eingangspegel +4 ... + 21 dBu

Maximaler Eingangspegel + 24 dBu

Eingangsimpedanz, symmetrisch \geq 10 kOhm asymmetrisch \geq 5 kOhm

Eingangs-Symmetrie ≥ 50dB a 30Hz...16 kHz

Fremdspannungsabstand \(\frac{1}{2}\) 100 dB

1.3. TAPE INPUT

Transformerless, balanced high level input aligned to nominal level. Switchable through external MIX-DOWN order with priority. Simultaneously the phase inverter in mute position.

Nominal input level +4 ... +21 dBu

Maximum input level +24 dBu

Input impedance, balanced ≥10 kOhm unbalanced ≥ 5 kOhm

Input symmetry ≥ 50 dB 30 Hz ... 16 kHz

Distortion ≤ 85 dB ⊖ 30 Hz ... 16 kHz

Signal to noise ratio ≥100 dB

1.4 GEN EINGANG

Tongeneratoreingang symmetrisch, trafolos, wird vom Testgenerator über Sammelschienen gespeist.

Eingangspegel -30 dBu

1.4 GEN INPUT

Audio generator input balanced, transformerless and the test generator gets fed by busses.

Input level

-30 dBu

1.5 EINGANGSUMSCHALTUNG

Der Eingangswahlschalter steuert über Gleichspannungssignale Feldeffekttransistoren, welche ihrerseits das Niederfrequenzsignal kontaktlos durchschalten.

Zusätzliche Steuereingänge (6V Gleichspannung) erlauben es

- den Mikrofoneingang ferngesteuert zu unterbrechen (Räuspertaste/Mute Schaltung)
- den TAPE-Eingang mit Priorität durchzuschalten (MIX DOWN).

1.5 INPUT SWITCHING

The input selector switch controls field effect transistors with current voltage signals which themselves contactlessly connect the low frequence signal through.

Additional control inputs (6 V direct current voltage) allow

- to interrupt the microphone input remote controlled (cough key/mute mounting)
- to connect the TAPE input through with priority (MIX DOWN).

FILTER

The toggle switch Ø with LED indication reverses

an operational amplifier from normal to inverted

The phase-relationship of all input signals gets

phase-relationship by field effect transistors.

The MIX DOWN operation reestablishes the not

1.6 PHASENSCHALTER Ø

Der Kippschalter Ø mit LED Anzeige steuert über Feldeffekttransistoren einen Operationsverstärker von normaler in invertierende Phasenlage um. Die Phasenlage aller Eingangssignale wird dadurch gedreht.

MIX DOWN Betrieb stellt den nicht invertierenden Betrieb wieder her.

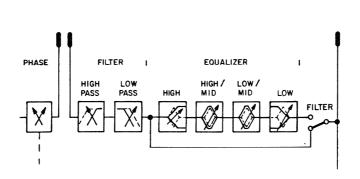
2. FILTER

2. FILTER

1.6 PHASE SWITCH Ø

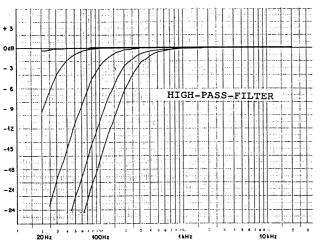
turned by that.

inverted activity.



2.1 TIEFENSPERRE (HIGH-PASS-FILTER

Hochpassfilter mit Butterworth-Charakteristik und 12 dB/Oktave Steilheit. Die Eckfrequenz ist mit Potentiometer im Bereich 30 ... 330 Hz stetig einstellbar. In der Stellung OFF wird die Grenzfrequenz auf ca. 5 Hz gelegt.



2.2 HOEHENSPERRE (LOW-PASS-FILTER)

Tiefpass-Filter mit Butterworth-Charakteristik und 12 dB/Oktave Steilheit. Die Eckfrequenz ist mit Potentiometer im Bereich 700 ... 22 kHz stetig einstellbar.

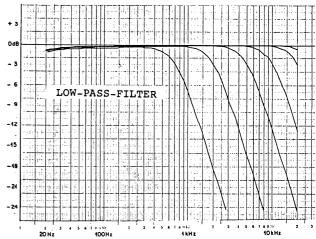
In der Stellung OFF wird die Grenzfrequenz auf ca. 30 $\,\mathrm{kHz}$ gelegt.

2.3 LED-ANZEIGE

Die den beiden Filtern zugeordnete LED-Anzeige leuchtet, sobald eines oder beide Filter eingeschaltet sind.

2.1 HIGH-PASS FILTER

High-pass filter with Butterworth characteristic and 12 dB/octave slope. Frequency range continuously variable in the range 30 ... 330 Hz. In position OFF, the cutoff frequency is put at about 5 Hz.



2.2 LOW-PASS FILTER

Low-pass filter with Butterworth characteristic and 12 dB/octave slope. Frequency range continuously variable in the range 700 ... 22 kHz.

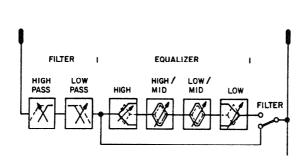
In position OFF, the cutoff frequency is put at about 30 kHz. $\,$

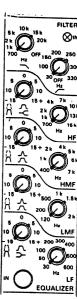
2.3 LED INDICATION

The LED which is assigned to both of the filters indicates one or both filters switched on.

3. ENTZERRER

3. EQUALIZER





Der Entzerrerteil umfasst vier parametrische Filter, deren Mittenfrequenz und deren Anhebung resp. Absenkung stufenlos eingestellt werden können.

3.1 HF-ENTZERRER

Höhenfilter 700 Hz ... 15 kHz

+ 15 dB

Charakteristik von Glockenkurve auf Fächerentzerrer umschaltbar

Güte der Glockenkurve ≈ 1

3.2 HMF/LMF-ENTZERRER

Zwei parametrische Filter mit umschaltbarer Güte. Einstellbare Mittenfrequenz 400 Hz...7kHz resp. 120 Hz...2kHz.

Anhebung / Absenkung

+ 15 dB

Güte: 1,1 / 3

3.3 LF-ENTZERRER

Tiefenfilter 30 ... 600 Hz,

+ 15 dB

umschaltbar von Glockenkurve auf Fächerentzerrer

Güte der Glockenkurve ≈ 1

3.4 ENTZERRER TASTE

Taste zur Ueberbrückung des ganzen Entzerrerteils LF / LMF / HMF / HF

The four-band equalizer has continuously, variable frequency controls, cut and boost controls are also continuously variable and have a range of $^{\pm}$ 15 dB.

3.1 HF EQUALIZER

High-pass Equalizer 700 Hz ... 15 kHz ± 15 dB

Characteristic switchable from "peaking" to "shelving"

Q factor of peaking curve -1

3.2 HMF/LMF EQUALIZER

Two parametric equalizer with switchable Q factor. Adjustable centre frequency 400 Hz ... 7 kHz respectively 120 Hz ... 2 kHz.

Boost / cut

+ 15 dB

Q factor: 1,1 / 3

3.3 LF EQUALIZER

Low-pass equalizer 30 ... 600 Hz

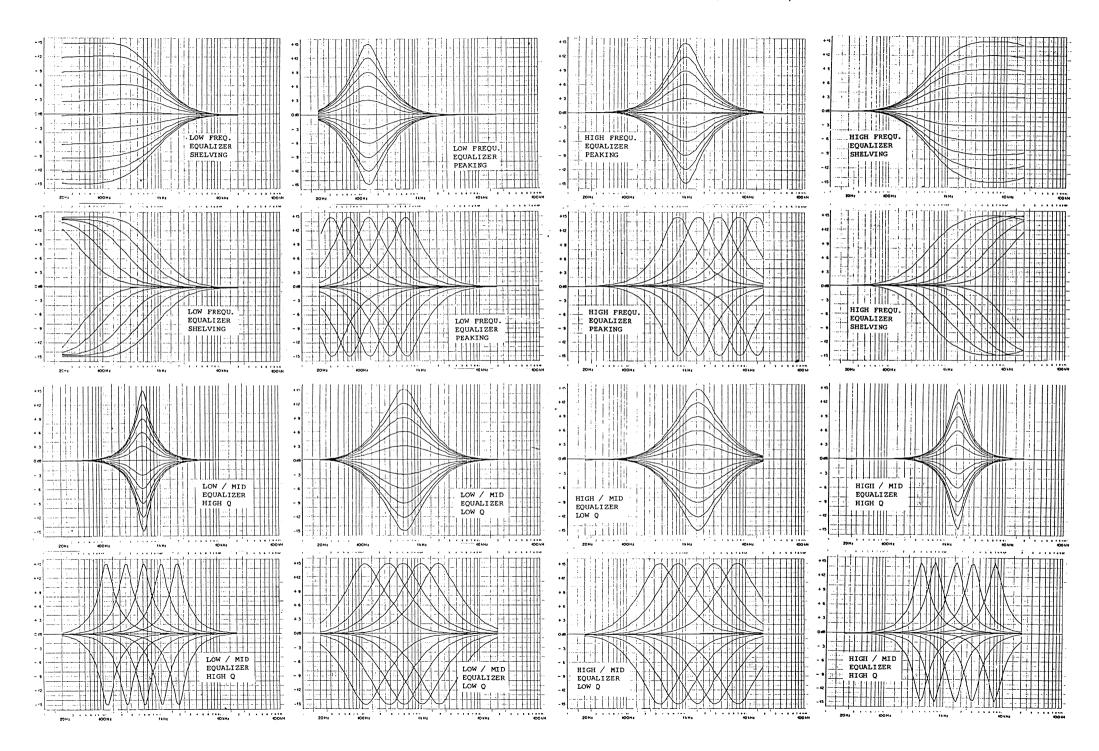
± 15 dB

switchable from "peaking" to "shelving"

Q factor of peaking curve ≈ 1

3.4 EQUALIZER BUTTON

Push button for bridging the whole equalizer LF / LMF / HMF / HF



4. HILFSAUSGAENGE AUX 1 ... AUX 4

Die vier getrennt regelbaren Hilfsausgänge werden zur Hallmischung, als Playback-, Foldback-oder Mithörkanal eingesetzt. Das Signal lässt sich über die mit den Potentiometern gekoppelten Zug-Druckschalter wie folgt wählen:

gezogen-PF Das Signal wird vor dem Flachbahrregler abgegriffen

gedrückt-AF Das Signal wird nach dem Flachbahnregler abgegriffen.

AUX 1 ... 3 sind Monoausgänge, der Stereohilfsausgang AUX 4 ist zusätzlich mit einem Panorama-Potentiometer ausgerüstet.

4. AUXILIARY OUTPUTS AUX 1 ... AUX 4

The four seperately adjustable auxiliary outputs are used for sound blending , as play-back-, foldback- or monitoring channel. The signal can be selected via the pull-push button which is connected with the potentiometer:

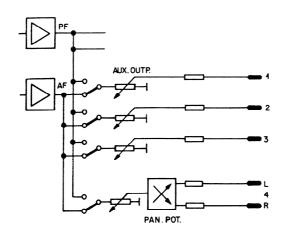
pulled-PF The signal gets tapped off before

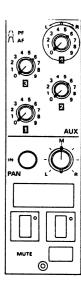
the waferswitch

crushed-AF The signal gets tapped off after

the waferswitch.

AUX 1 \dots 3 are mono outputs, the stereo auxiliary output AUX 4 is additionaly equipped with a panorama potentiometer.





5. MUTE- und USER-TASTEN

MUTE:

Impulstaste mit elektronischer Umschaltung zum Stummschalten des Eingangskanales. Statusanzeige mit LED.

USER:

Umschalten mit LED-Anzeige für Zusatzfunktionen die vom Anwender gewünscht werden, z.B. Aufheben des MIX-DOWN Zustandes, Fernstart einer Quelle, Signalisation usw. Das darunter liegende Einlageplättchen kann mit der Funktionsbezeichnung graviert werden.

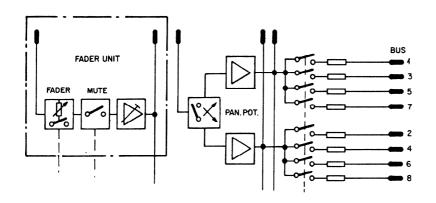
5. MUTE- and USER-PUSH BUTTON

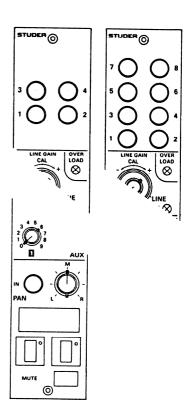
MUTE:

Impulse push button with electronical switch for muting of the input channel. State indicator with LED.

USER:

Switching with LED indicator for additional functions which are requested by the user, for example cancelling of the MIX DOWN condition, remote starting of a source, signalization etc. The small insertion plate which is located below can be engraved with the description of the function.





6. PAN.POT.

Ein Drucktastenschalter erlaubt das Zuschalten eines Panorama-Potentiometers in den Hauptausgang.

7. SUMMEN ANWAHL

Vier Tasten bei der Eingangseinheit 1.912.220 und acht Tasten bei der Einheit 1.912.222 dienen zur Anwahl der 4 resp. 8 Hauptsammelschienen.

Bei 16- und 24-Kanal Mischpulten wird das Regiepult durch einen 8 resp. 16-teiligen Tastensatz im Schrägteil ergänzt.

Die Modulationsdurchschaltung erfolgt über Feldeffekt-Transistoren.

8. OVERLOAD-SIGNALE

Der Audiopegel wird an drei Stellen der Eingangseinheit überwacht. Sobald der Pegel am Ausgang des Entzerrers oder nach dem Flachbahnregler einen Pegel von ca. + 17 dBu überschreitet (ca. 3 dB unterhalb der Uebersteuerungsgrenze) leuchtet die OVERLOAD LED

6. PAN.POT.

A push button switch allows the connection of a panorama potentiometer into the main output.

7. MASTER SELECTION

Four push buttons at the input unit 1.912.220 and eight push buttons at the unit 1.912.222 serve for the selection of the 4 respectively 8 main bus bars.

The mixing desk of 16- and 24-channel mixing consoles gets completed by an eight respectively sixteen parts key set in the sloping part.

The modulation interconnection takes place over field effect transistors.

8. OVERLOAD SIGNALS

The audio level gets controlled on three positions of the input unit. As soon as the level at the output of the equalizer or after the fader exceeds a level of about +17 dBu (about 3 dB below the overmodulation limit), the OVERLOAD LED lights up.

9. FLACHBAHNREGLER 1.911.110

9.1 REGLER

Flachbahnregler mit conductiv-Plastik-Bahn.

9.2 PFL TASTE

Vorhörtaste (Impulstaste mit elektronischer Umschaltung und LED-Anzeige) schaltet das Audiosignal vor dem Flachbahnregler auf die PFL-Sammelschiene.

Durch Einlöten einer Brücke auf der gedruckten Leiterplatte kann das PFL Signal beim Oeffnen des Reglers automatisch unterbrochen werden.

9.3 P. SOLO TASTE

Abhörtaste (Impulstaste mit elektronischer Umschaltung und LED-Anzeige) schaltet das Audiosignal nach dem Panorama-Potentiometer auf die Stereo-Vorhörsammelschiene.

9.4 SIGNALSTROMKREIS

Der Flachbahnregler ist mit einem Schalter versehen, der beim Oeffnen des Reglers ein Signal an die logische Schaltung weitergibt. Abhängig vom MUTE-Schalter, der Stellung des Eingangswählers, der Summenanwahltasten und der Stellung des Summenreglers, eventuell auch der MIC-CUT Information, entsteht am Ausgang je ein getrenntes Faderstart-Signal für die Eingänge MIC, LINE und TAPE.

9. FADER 1.911.110

9.1 CONTROL

Fader with conductive plastic resistor layer.

9.2 PFL PUSH BUTTON

Pre-fader listening (pulse push button with electronical switching and LED indication) switches the audio signal before the fader to the PFL bus bar.

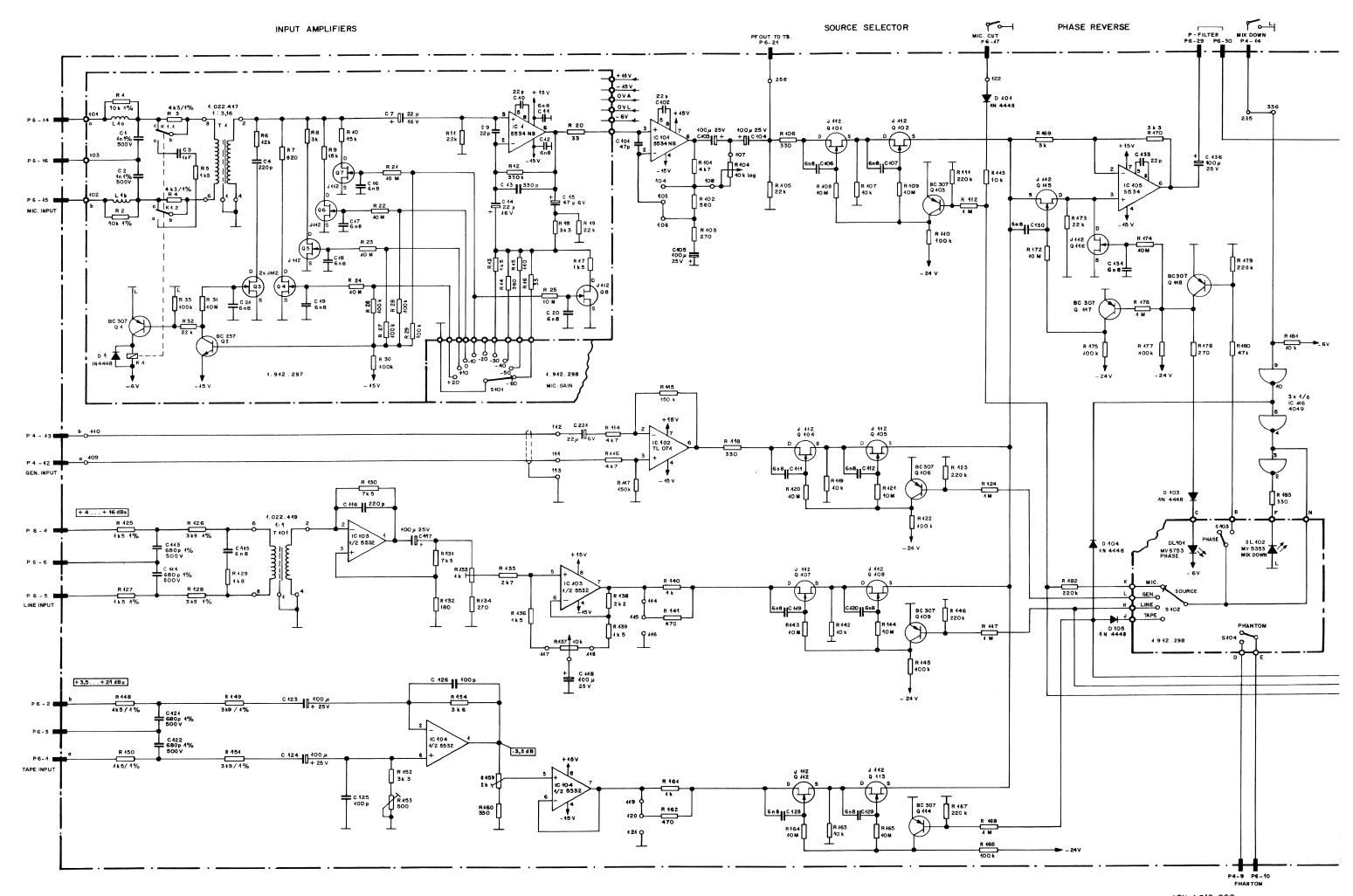
By soldering a bridge on the printed circuit board, the PFL signal can automatically be interrupted while opening the control.

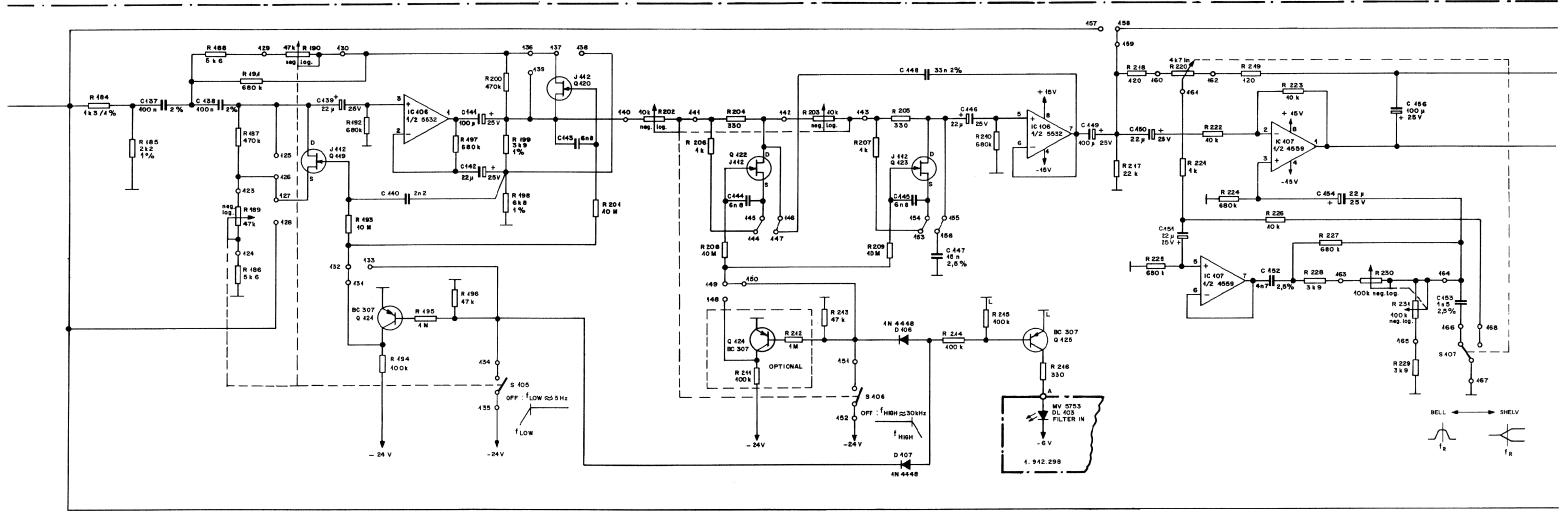
9.3 P. SOLO PUSH BUTTON

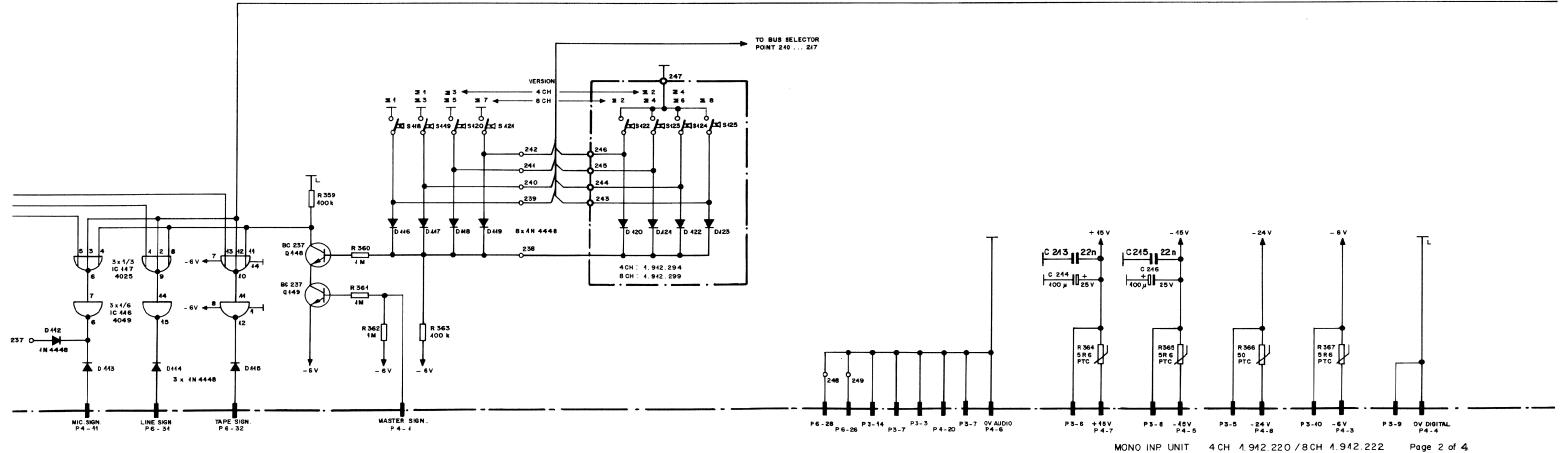
The monitoring key (pulse push button with electronical switching and LED indication) switches the audio signal after the panorama potentiometer to the stereo pre-fader listening bus bar.

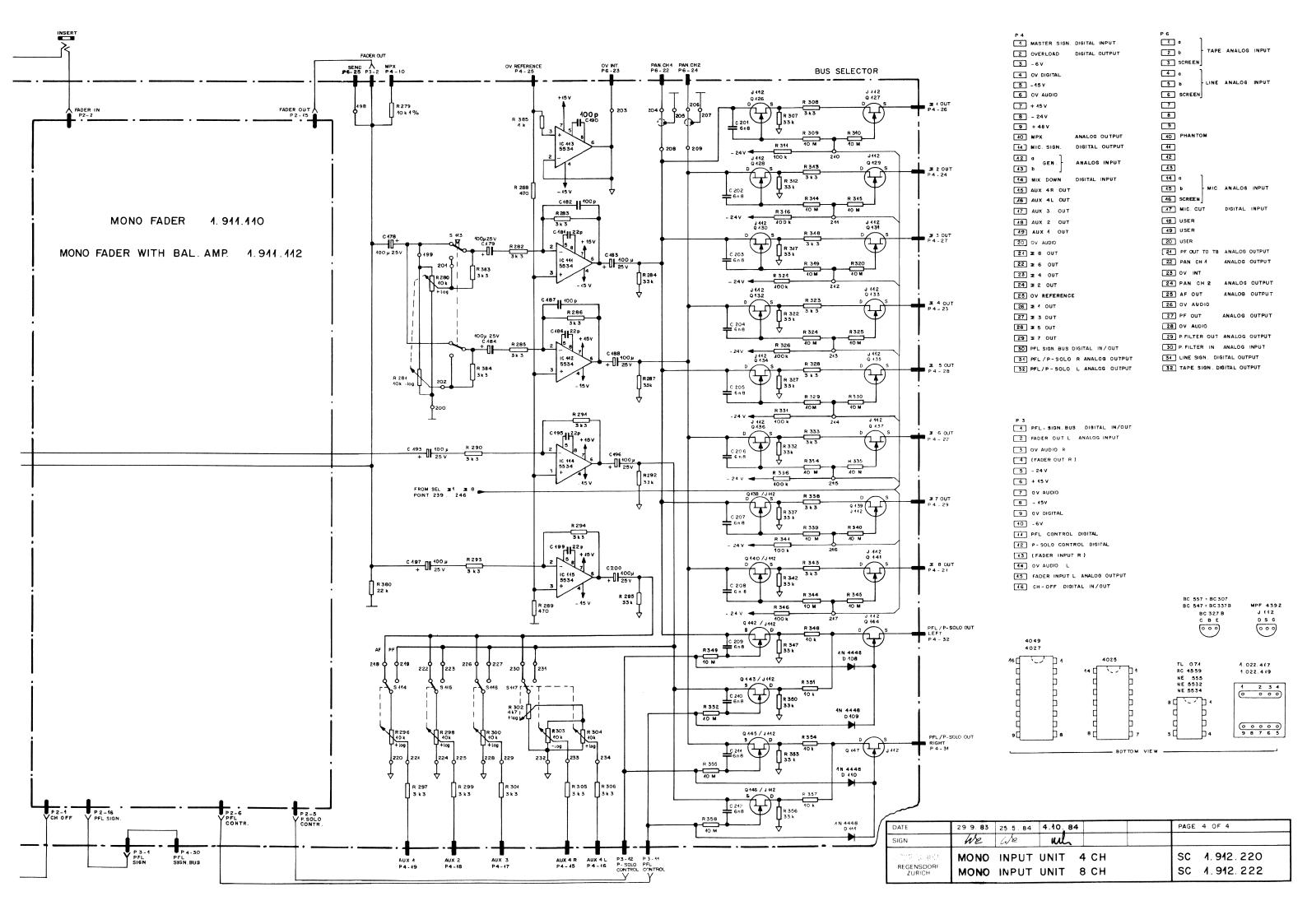
9.4 SIGNALLING CIRCUIT

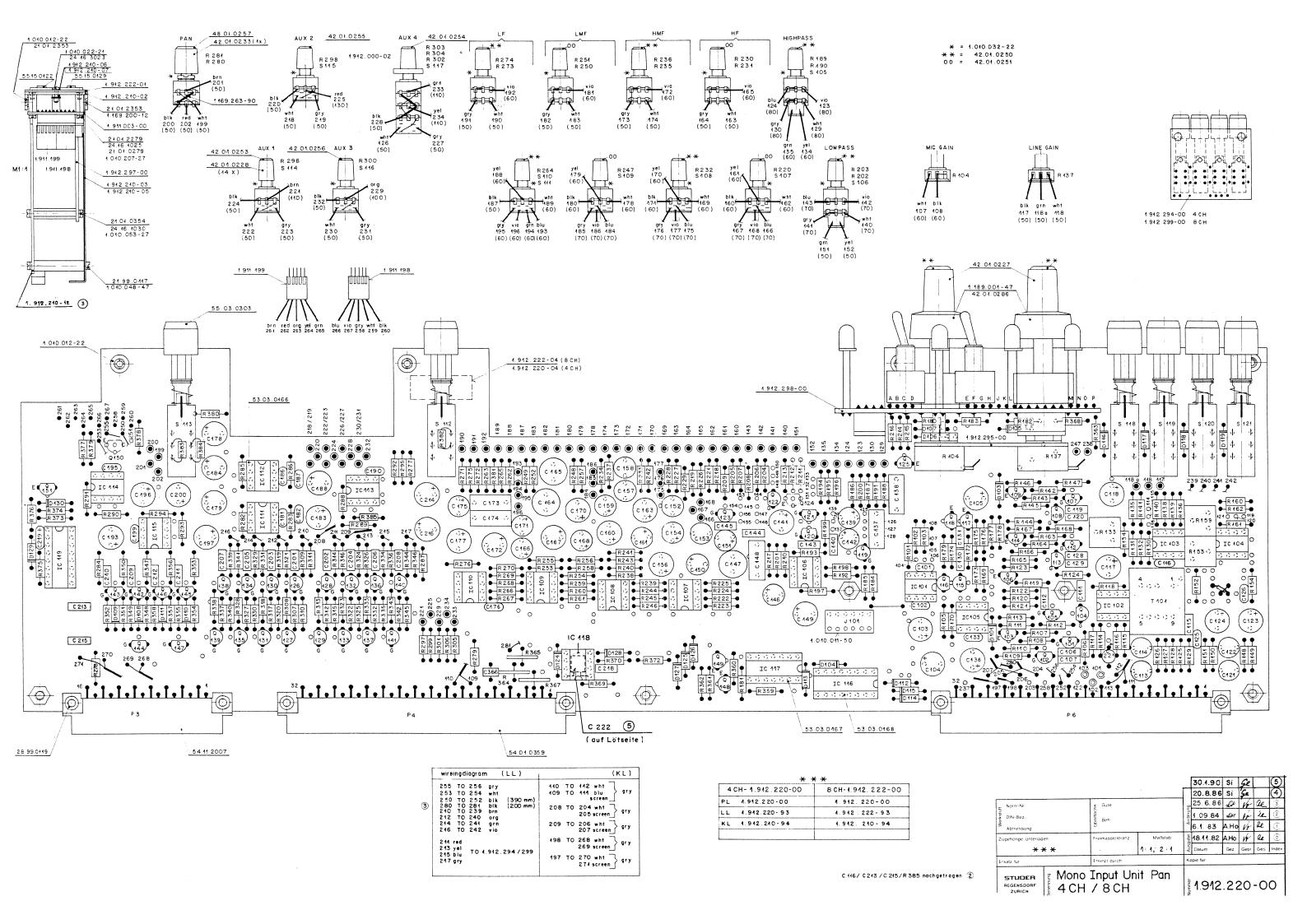
The fader is equipped with a switch which passes a signal on to the logical connection while opening the control. Depending on the MUTE switch, the position of the input selector, the master bus buttons and the position of the master control maybe even of the MIC-CUT information, at the output is each a seperated fader start signal formed for the inputs MIC, LINE and TAPE.

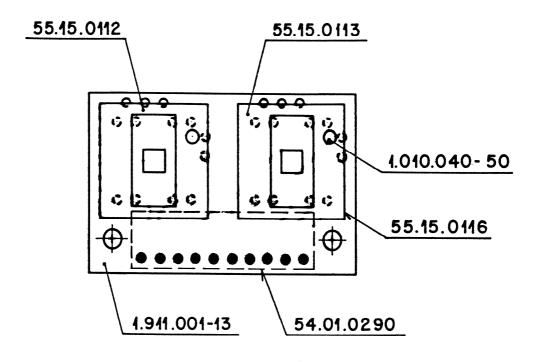




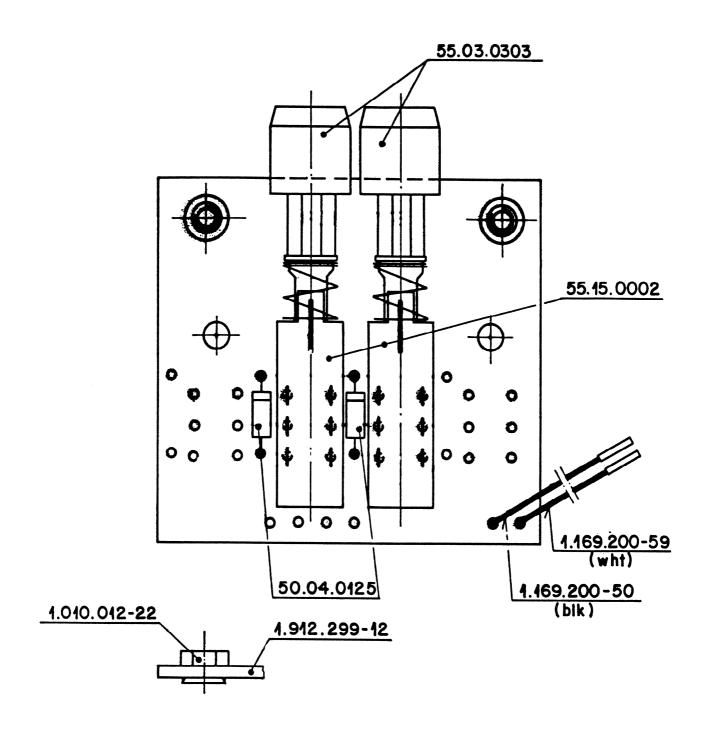




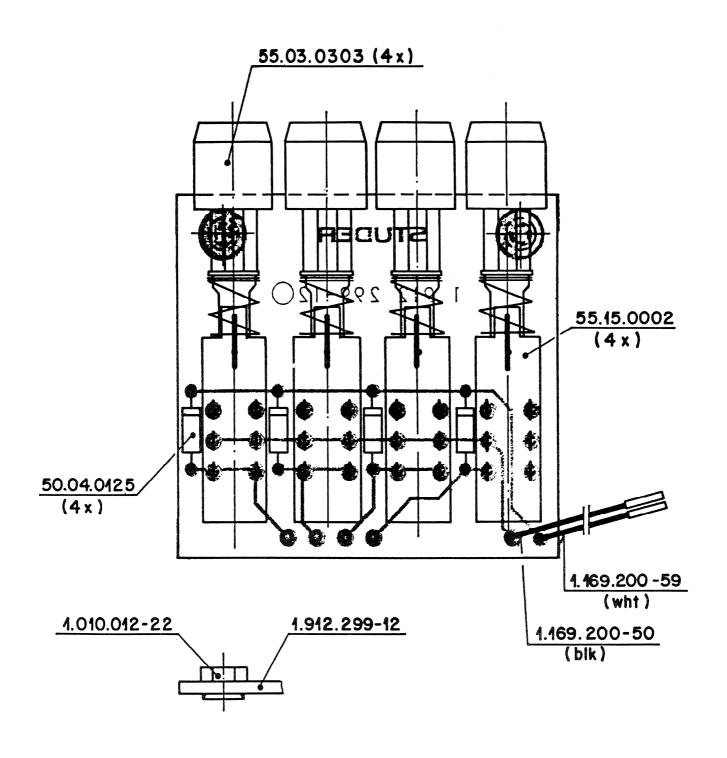




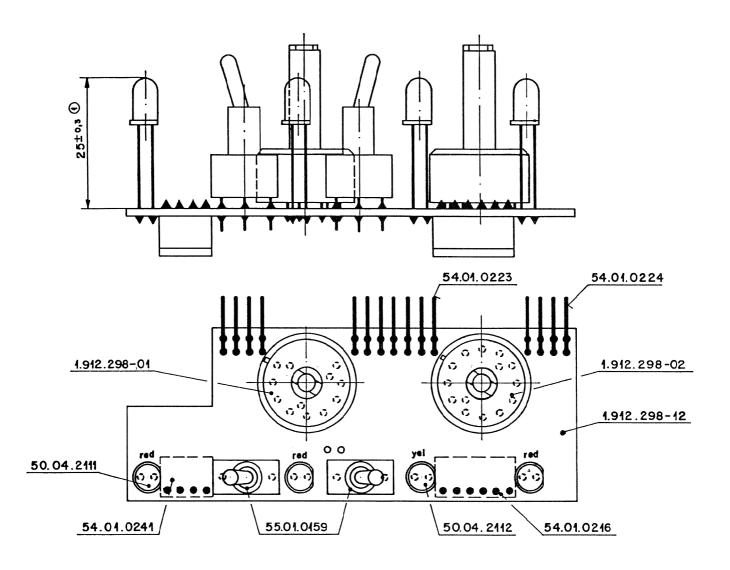
STUDER REGENSOORF ZORICH PUSHbutton Board					ırd N-L	ummer:	1.911.	.00)3-	- 00	0
E	satz für:		Era	setzt durch:		Kopie für:					
L			L	±	ş	Datum	Gez.	Gepr.	Ges.	Index	
Zı	Zugehörige Unterlagen:			Freimasstoleranz: Maßstab:			19.5.82 Datum	Но	W		0
5	Abmessung:		õ	Beh.:							①
Werkstoff	DIN-Bez.:		Oberflac								2
ŧ	Norm-Nr.:		휽	Güte:							3



F	Norm-Nr.:		ě	Güte:	Güte:						(3)
Werkstoff	DIN-Bez.:		Oberfläche	Beh.:							2
3	Abmessung:		q0	Don.:	Dell						0
Zu	gehörige Unterlag	gen:	Fr	elmasstoleranz:	Maßstab:	age	4.6.82	Но	W	ae	0
L				± 2:4			Datum	Gez.	Серг.	Ges.	Index
Ere	satz für:	,	Ersetzt durch:				Kople für:				
	STUDIER REGERSDORF ZÜRICH Bus Board 4CH					Nummer:	1.912	.2	94	-0	0



	REGENSOORF ZORICH BUS Board 8 CH					lummer:	1.912	.29	9-	00)
Er	satz für:	,	En	setzt durch:		Kopie für:					
L	Zugehörige Unterlagen:			Frelmasstoleranz: Maßstab:			Datum	Gez.	Gepr.	Ges.	Index
Zu							4. 6.82	Но	W	ae	0
3	Abmessung:		å			Ånden					1
Werkstoff	DIN-Bez.:		Oberfläc	Beh.:							2
#	Norm-Nr.:			Güte:				1			3



Ę.	Norm-Nr.:		9	Güte:	Gûte:						(3)
Verketoff	DIN-Bez.:		arffac	Beh.:		ş					2
ž	Abmessung:		9	Sur.	Bent:		4. 9. 83	A.Ha	W		0
Zu	Zugehörige Unterlagen:			Freimasstoleranz: Maßstab:			10.6.82	Но	K	ae	0
							Datum	Gez	Gepr.	Gea	Index
Er	satz kör:		Ersetzt durch:			Kopie für:					,
ŧ	STUDER REGENSPORF ZÜRICH			Board		Nummer	1.912	.29	8-	0	0

IND	POS NO I	PART NO	VALUE		TIONS/EQUIVALENT	MFR	INC	POS NO	PART NO	VALUE	į s	PECIFICATION	IS/EQUIVALENT
	A 101	1.912.296		MIC. PREAMPL	TRANSFORMERLESS			C 123	59.22.5101	100 A	4	16V	EL
	102	1.912.297		2 в	WIT TRAFO			124	59.22.5101	100 ,0	u	16V	EL
	103	1.912.298		SWITCHBOARD				125	59.34.4101	100 p			CER
	104	1.912.299		BUS BOARD	8 CH ONLY 8CH			126	59,34.4101	100 6			CER
	105	1.912.294		BUS BOARD	4CH *								
	106	1.911.003		PUSHBUTTON				128	59.06.0682	6,8 r	10%	63V	PE
								129	59.06.0682	6,8 1	10%	637	PE
								130	59.06.0682	6,8 r	10%	63V	PE
	C 101	59.34.2470	47 p		CER			131	59.06.0682	68 r	10%	63V	PE
	102	59.34.2220	22 p		CER								
	103	59.22.5101	ىر 100	161	EL			133	59.34.2220	22 c			CER
	104	59.22.5101	100 ju	16V	EL								
	105	59.22.5101	ىر 100	16V	EL								
	106	59.06.0682	6,8 n		PE			136	59.22.5101	ىر 100		16V	EL
	107	59.06.0682	6,8 n	10% 63V	PE			137	59.99.0254		2%	63V	PC
								138	59.99.0254	100 r	2%	63 V	PC
								139	59.22.5220	22 1	u u	16Y	EL
						T		140	59.06.0222	2,2		63V	PE
	111	59.06.0682	6,8 n	10% 63V	PE			141	59.22.5104	100 j		16V	EL
	112	59.06.0682	6,8 n	10% 637	PE			142	59.22.5220	22 μ	1	16V	EL
	113	59.05.1681	680 p	1% 630V	PP			143	59.06.0682	6,8 r	10%	G3V	PE
	114	59.05.1681	680 p	1% 630V	PP			144	59.06.0682	6,8 r		63V	PE
	115	59.06.0682	6,8 n	10% 63V	PE.			145	59.06.0682	6,8 r		63 <i>V</i>	PE
	116	59.34.4221	220 p	,	CER			146	59.22.5220	ىر 22		16V	EL
	117	59.22.5101	100 Ju	16V	EL			147	59.05.2453	45 n	2,5%	63V	PP
	118	59.22.5101	100 u	16V	EL			148	59.99.0514	33 n	-01	63V	PC
	119	59.06.0682	6,8 n		PE			149	59.22.5101	100 L	d	16V	EL
	120	59.06.0682	6,8 n	10% 63V	PE			150	59.22.5220	22 1	,	16V	EL
	121	59.05.1681	680 p	1 % 630V	PP			151	59.22.5220	22	,	16V	EL
	122	59.05.1681	680 p	1 % 630V	PP			152	59.05.2472		25%	The state of the s	
IND	DATE	NAME					IND	DATE	NAME				
(4)			CER: CERA	MIC	SAL: SOLID ALUMINIUM	(4						
3	4.10.8	4 84	EL : ELEC	TROLYTIC			3	4.10.8	34 gg				
2	22. Aug	1983 Eckert	PC: POLY	'CARBONAT			2	22. Aug.	1983 Eckert				
0	6. Jan	1983 Eckert	PE : POLY		* ONLY 4CH		0		983 Eckert				
0	2. Dez.	1981 Eckert	PP : POLY	PROPYLEN	1.912,222.0	0	0	2. Dez. 1	381 Eckert				
				7. 1	0.10 0.00 0.01		_		110110 11011		/ 0.011	T	0 000 00

4CH / 8CH 1.912.220.00 PAGE 2 OF 21 STUDER MONO INPUT

IND	POS NO	PART NO	VALUE			SPECIFICATION	S/EQUIVALENT	MFR
	C 153		1,5	n	2,5%	637	PP	
	154	59.22.5220	22	И		161	EL.	
				_				
	156	59.22.5101	100	ш		16V	EL	
	157	59.05.2472	4,7	n	2,5%	€3V	PP	
	458	59.05.2472	4,7	n	2,5%	63V	PP	
	159	59.22.5220	22	μ		16V	EL	
	160	59.22.5101	100	μ		16V	EL	
	161	59.22.5220	22	и		16V	EL	
				•				
	163	59.22.5101	100	N		16V	EL	
	164	59.05.2153	15	5	2,5%	C3V	PP	
	165	59.05.2153	15	5	25%	₽V	PP	
	166	55.22.5220	22	μ		16V	EL.	
	167	59.22.5101	100	u		16V	EL	
	163	59.22.5220	22	и		16V	EL.	
		·						
	170	59.22.5101	100	μ		16V	EL	
	171	59.22.5220	22	μ		16V	EL	
	172	59.22.5101	100	μ		16V	EL	
	173	59.99.0254	100	0	2%		PC	
	174	59.99.0514	33	n	2,5%		PC	
	175	59.22.5220	22	и		16V	EL	
	176	59.34.4101	100	ρ			CER	
	177	59.22.5101	100	N		16V	EL	
	178	59.22.5101	100	IJ		16V	EL	
	179	59.22.5101	100	u		16V	EL	
	181	59.34.2220	22	ρ			CER	
	182	59.34.4101	100	ρ			CER	

STUDER MONO INPUT UNIT PAN 4CH/8CH 1.912.220.00 PAGE 1 OF 21

IND	POS NO		ART NO	VALUE	:	S	PECIFICATIO	NS/EQUIVALEN	١T	MFR
	C 183	59.	22.5101	100	μ		16V	EL		
	184	59.	22.5101	100	Д		16V	EL		
-	186	59	34.2220	22	ρ		···	CER		-
-	187	59	34.4101	100	ρ			CER		+
	188	59.	22.5101	100	_P _U		16V	EL		
3	190	59	34.4101	10ò	ρ			CER		
			a , , , , , , ,					CLK		
	193	59.	22.5101	100	Ш		16V	EL		
	105		01 0000							
_	195	<u> 59.</u>	34.2220	22	Р			CER		
	196	<u>59.</u>	22.5101 22.5101	100	Щ		16V	<u>EL</u>		
	197	59.	22.5101	400	м		167	EL		-
	199	59.	34.2220	22	ρ			CER		-
	200	59.	22.5101	100	и		16V	EL		
	201	59.	06.0682	6,8	'n	10%	63 <i>V</i>	PE		
	202	59 .	06.0682	6,8	n	٧	63V	PE		
	203	59.	06.0682	6,8	n	1	63 <i>V</i>	PE		
	204	59.	06.0682	6,8	n	,	63V	PE		
	205	59.	06.0682	6,8	'n	١,	63V	PE	*	
	206	59.	06.0682	6,8	n	•	63V	PE	*	
	207	59.	06.0682	G8	n	•	63 V	PE	*	
	208	59.	06.0682	6,8	n		637	PE	*	
	209	59.	06.0682	6,8	n	,	637	PE		1
	210	59.	06.0682	6,8	n	b	63V	PE		
	211	59.	06.0682	6,8 -	n	¥	63V	PE		1
	242	59.	06.0682	6,8	n	t	G3V	PE		
IND	DATE		NAME -							

IND	DATE	NAME	
4			
3	4.10.84	Ja.	
2	22, Aug. 1983	Eckert	
0	6. Jon. 1983	Eckert	
0	2.Dez. 1981	Eckert	
5	STUDER	MONO INPL	JT 4CH / 8CH 1.912.220.00 PAGE 3 OF 21

9	STUDER	MONO	INPL	JT	4CH/8CH	1.912.	220.00	PAGE 4 OF 21
0	2. Dez. 1981	Eckert						
Θ	6. Jan. 1983	Eckert				* ONLY	8 CH	
@	22. Aug. 1983	Eckert						
3	4.10.84		90					
9								

MFR

2 C 243 59.06.0223 22 n PE C 244 59.22.5104 400 μ 46V EL 2 245 59.06.0223 22 n PE 246 59.22.5101 400 μ 46V EL 248 59.06.0223 22 n PE 249 59.26.9109 4 μ 6V SAL 221 59.30.2220 22 μ 6V TA D 101 50.04.0125 1N 4448 404 50.04.0125 1N 4448 405 50.04.0125 1N 4448 406 50.04.0125 1N 4448	MF
C 244 59.22.5104 400 μ 46V EL 2 245 59.06.0223 22 n PE 246 59.22.5101 400 μ 46V EL 248 59.06.0223 22 n PE 249 59.26.9109 4 μ 6V SAL 221 59.30.2220 22 μ 6V TA D 101 50.04.0125 1N 4448 403 50.04.0125 1N 4448 405 50.04.0125 1N 4448 406 50.04.0125 1N 4448	
2 245 59.06.0223 22 n PE 246 59.22.5101 400 μ 46V EL 248 59.06.0223 22 n PE 249 59.26.9109 1 μ 6V SAL 221 59.30.2220 22 μ 6V TA D 101 50.04.0125 1N 4448 403 50.04.0125 1N 4448 405 50.04.0125 1N 4448 406 50.04.0125 1N 4448	
246 59.22.5101 400 \(\mu\) 46V EL 248 59.06.0223 22 \(\alpha\) 6V SAL 249 59.26.9109 4 \(\mu\) 6V SAL 221 59.30.2220 22 \(\mu\) 6V TA D 101 50.04.0125 1N 4448 403 50.04.0125 1N 4448 405 50.04.0125 1N 4448 406 50.04.0125 1N 4448	
219 59.26.9109 1 \(\mu\) 6V SAL 221 59.30.2220 22 \(\mu\) 6V TA D 101 50.04.0125 1N 4448 103 50.04.0125 1N 4448 104 50.04.0125 1N 4448 105 50.04.0125 1N 4448 106 50.04.0125 1N 4448	
219 59.26.9109 1	-
221 59.30.2220 22	
103 50.04.0125 1N 4448 104 50.04.0125 1N 4448 105 50.04.0125 1N 4448 106 50.04.0125 1N 4448	
103 50.04.0125 1N 4448 104 50.04.0125 1N 4448 105 50.04.0125 1N 4448 106 50.04.0125 1N 4448	
104 50.04.0125 1N 4448 105 50.04.0125 1N 4448 106 50.04.0125 1N 4448	
105 50.04.0125 1N 4448 106 50.04.0125 1N 4448	
106 50.04.0125 1N 4448	
107 50 01 0105 12 1110	
107 50.04.0125 1N 4448	
108 50.04.0125 1N 4448	
109 50.04.0125 1N 4448	
110 50.04.0125 1N 4448	
411 50.04.0125 1N 4448	
112 50.04.0125 IN 4448	
113 50.04.0125 1N 4448	
114 50.04.0125 1N 4448	
145 50.04.0125 1N 4448	
116 50.04.0125 1N 4448 *	
117 50.04.0125 1N 4448	
118 50.04.0125 1N 4448	
D DATE NAME	

IND	DATE	` NAME	İ	
(4)				
3	4.10,84	49		
2	22. Aug. 83	Eckert		
0	6.Jan. 83	Eckert		* ONLY 8CH
0	2. Dez. 81	Eckert		
5	STUDER	MONO INF	PLIT 4CH/8CH	1.912.220.00 PAGE 5 OF 21

D 119 SPECIFICATIONS/EQUIVALENT MFR 50.04.0125 1N 4448 50.04.0125 1N 4448 50.04.0125 1N 4448 50.04.0125 1N 4448 50.04.0125 1N 4448 120 * 121 122 123 * 50.04.0125 1N 4448 50.04.0125 1N 4448 124 1N 4448 125 50.04.0125 1N 4448 50.04.0125 1N 4448 50.04.0125 1N 4448 50.04.0125 1N 4448 50.04.0125 1N 4448 126 127 128 400 mW 129 130 50.04.2111 MV 5753 50.04.2112 MV 5353 DL 101 102 103 50.04.2112 NV 5753 104 50.04.2111 MV 5753 1051.010.040.50 CQY 41 NA 1051.010.040.50 CQY 41 NA 101 50 . 05 . 02 44 NE 5534NB 102 50 . 09 . 04 03 TL 071 CP 103 50 . 09 . 04 05 NE 5532 N

DATE 3 4.10.84 2 22. Aug. 83 Eckert ① 6. Jan. 83 Eckert ○ 2. Dez. 81 Eckert STUDER MONO INPUT

* ONLY 8CH

4CH / 8CH | 1.912.220.00 PAGE 6 OF 21

13.046.578

13 046 578

IND	POS NO		VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	IC 101		NE 5532 N		
	105		NE 5534 N		
	108	50.09.0105	NE 5532 N		
	107	50.09.0107	RC 4559 NB		
	108	50.09.0107	RC 4559 NB		
	100	1 50.09.0107	RC 4559 NB		
	110		NE 5532 N		
	111	50.05.0243	NE 5534 N		
	112	50.05.0243	NE 5534 N		
	113		NE 5534N		
	114	50.05.0243	NE 5534 N		
	-HE	50.05.0243	NE 5534 N		
	118	50.07.0049	4049		
	117	50.07.0012	4025		
	. 118	50.05.0458	555		
	119	50.07.0027	4027		
	J 101	54.01.0216	6 P		
	P 3	54.11.2007	2 * 8		
	4	54.01.0359	2×16		
П	(54.01.0359	2*16		
\Box					
ומטו	D.A	TF I NAME			

1140	DATE	NAME				
4		4				
3	4.10.84	94				
2	22. Aug. 83	Eckert				
①	6. Jan 83	Eckert				
0	2. Dez. 81	Eckert				
2	STUDER	MONO INF	PUT 1	4CH/8CH	1,912.220.00	PAGE 7 OF 21

NDI POS NO I	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFF
Q 101	50.03.0350	J112		
102	50.03.0350			
103	50.03.0515	BC 307		
104	50.03.0350] 112		
105	50.03.0350	J 112		
106	50.03.0515	BC 307		
107	50.03.0350	J 112		
108	50.03.0350			
103	50.03.0515			
112	50.03.0350	J 112		
113	50.03.0350			
114	50.03.0545			1
115	50.03.0350	J 112		
116	50.03.0350			
117	50.03.0515	BC 307		
118	50.03.0515	BC 307		
119	50.03.0350			
120	50.03.0350			
121	50.03.0515			+-
122	50.03.0350			1
123	50.03.0350			\top
124	50.03.0515		OPTIONAL	+
125	50.03.0515		51.13141	+
126	50.03.0350			+-
127	50.03.0350	J 112		+-
128	50.03.0350			+-
129	50.03.0350	7 112		+
130	50.03.0350	1442		+
130		J 112		L

IND	DATE	NAME	1	•	
4					
3	4.10.84	la			
2	22. Aug. 83				
0	6. Jan. 83	Eckert			
0	2. Dez. 81	Eckert			
2	TUDER	MONO INP	UT 4CH/8CH	1.912.220.00	PAGE 8 OF 21

ND	PO	s NO		PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	Q	131	50	.03.035	0 J 112		
		132	50	.03.035	50] 112		
		133	50	.03.035	TO 3 112		
		134	50	.03.035	0 3 112	*	
		135		.03.035		*	
		136		.03.035	O J 112	*	
		137	50	.03.035	0 3112	*	
		138	50	.03.035		*	
		133	50	.03.035	0 J112	*	
		140	50	.03.035		*	
		141	50			*	
		142	50	.03.035	iO J 112		
		143	50		0 J 112		
		144	50	.03.035			
		145	50		0] 112		
		146	50	.03.035			
		147	50	.03.035			
		148	50	.03.043	16 BC 237		
		149	50				
		150	50		5 BC 307	OPTIONAL	
		151	50	.03.043	16 BC 237		
				San Mary Control of the Control of t			
ND	 I	DA.	re	NAME	1		
1ND (4) (3)		DA.		NAME			

IND	POS	S NO	PART NO	VALUE		SPECIFICATIONS/EQUIVALENT	MFR
	R	101	57.11.447	2 4,7	k	5%	
		102	.456	1 560		5%	
		103	.427	1 270		5%	
		104	1.912.001.2	2 40	k	POS. LOG. POT	
		105	57.11.422	3 22	k		
		106	1 .433	1 330		5%	
		-107	. 410	3 40	k		
		108	.610	6 10	М		
		109	.610	6 10	М		
		110		4 100	k		
		111	. 422	4 220	k		
		112	.410	5 1	М		
		113	.410	3 40	k		
		114	.447	2 4,7	k	2%	
		115	',415	150	k		
		116		2 4,7	k	2%	
		117	. 415	4 150	k	2%	
		118		1 330		5%	
		119		3 10	k		
	<u> </u>	120	1.610	6 10	М		
		121	.610	6 10	M		
		122		4 100	k		
		123		4 220	k		
	Ŀ	124	. 410	5 1	М		
		125 126	.315	2 4,5	k	1%	
				2 39	k	1%	
		127	.315	2 15	k		
		128	.339	2 39	k	1%	
		129	.418	2 18	k	5%	
		430	.375	2 7,5	k	5%	

| NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME | NAME |

3.046.578

STODER | MONO MINUT 464 / 864 | 1.312

13.046.578

IND	POS NO	PART NO	VALUE		SPECIFICATIONS/EQUIVALENT	MFR
	131	57.11.3752	7,5	k 5%		
П	132	4181	180	5%		
П	133	58.01.8102		k	TRIM	
П	134	57.11.4271	270	5%	>	
П	135			k 5%	•	
П	136	• • . 4152	1,5	k 5%)	
П		1.912.001.21	10	k LIN	N POT	
П	138	57.11.4222	2,2	k 5%		
П	139	.4152		k 5%		
	140	.4102		k 5%	,	
	141	.4471	470	5%		
	142	. 4103	10	k		
	143	.6106		М		
	144	.6106		4		
П	145	.4104		k		
	146	. 4224	220	k		
П	147	.4105	1 1	4		
	148	.3152	15	k 1%		
	149	.3392	39	k 1%		
	450	.3152	15	k 1%		
	151	339 2	39	k 1%		
	152	.4332	3,3	k		
	153	.4332 58.01.8501	39 33 500		TRIM	
П	154	57.11.3362	3,6	k 2%		
П		i				
П		,		1		
П						
П				1		
П	159	58.01.8202	2	k	TRIM	
\sqcap	160	57.41.4331	330	1		

IND POS N		RT NO	VALUE			MFR
R 16	1 57.1	11.4102	1	k	5%	
18	2	.4471	470		5%	
16	3	. 4103	10	k		
16	4	.6106	10	M		
16	5	.6106 .6106	40	М		
1		1.4104	100	k		
1	57	.4224	220	k		
1(8	.4105	1	M		
1		.3302	3	k	2%	
1	0	. 4332	33	k	2%	
1		.6106	- 10	М		
1	3	. 4223	22 40	k		
17	4	.6106		М		
1		.4104	100	k		
17	6	.4105	1	M		
15		. 4104	100	k		
17	8	.4271	270			
15	9	.4224	220	k		
18		.4473	47	k		
18		.4103	10	k		
18	2	.4224	220	k		
18		.4331	330			
18	4	.3432	4,3 2,2 5,6	k	2% 2%	
18	5	.4222	2,2	k	2%	
18		.4562	56	k	5%	
18		.4474	470	K	54	
18	3	.4562	5,6 47	k		
18	91.912.	001.52	47	k		
13	91.912. 01.912.	001.52	47	k	FOT. NEG. LOG.	
	ATE I	NAME I				

IND	DATE	NAME	
4		2	
(3)	4.10.84	42	
2	22, Au g. 83	Eckert	
Θ	6. Jan. 83 .	Eckert	
0	2. Dez. 81	Eckert	
2	STUDER	MONO IN	PUT 4CH / 8CH 1.912.220.00 PAGE 11 OF 21

IND	POS NO		T NO	VALUE		SPECIFICATIONS/EQUIVALENT	MFR
	R 191	57.1	1.4684	680	k		
	192	1	.4684	680	k		
	193		.6106	10	M		
	194		.4104	100	k		
	195		.4105	1	М	•	
	196		.4473	47	k		
	197		.4684	680	k		
	198		.3682	6,8	k	ላ%	
	199		.3392	3,9		1%	
	200		.4474	470	k	5%	
	201		.6106	10	М		
	202	1.912.	001.51	10	k		
	203	1.912.	001.51	10	k		
	204	57.4	1.4331	330		5%	
	205		.4331	330		5%	
	206		.4102	1	k		
	207		.4102	1	k	5%	
	208		.6106	10	M		
	209		.6106	10	М		
	210		.4684	680	k		
	211		.4104	100	k	OPTIONAL OPTIONAL	
	212		.4105	1	M	OPTIONAL	
	243		.4473	47	k		
	214		.4104	100	k		
	245		.4104	100	k		
	246		.4331	330			
	217		. 4223	22	k		
	248		.4121	120		5%	
	249		.4121	120		5%	
	220	1.912.	001.41	4,7	k	LIN POT.	

IND	DATE	NAME					
4							
3	4.10.84	Ja]				
2	22. Aug. 83	Eckert					
0	6. Jan. 83	Eckert					
0	2. Dez. 81	Eckert					
5	STUDER	MONO IN	PUT	4CH / 8CH	1.912.	220.00	page 13 of 21

IND	PO	s NO		RT NO	VALUE		SPECIFICATIONS/EQUIVALENT	MFR
	R	221	57.4	1.4102	1	k		
		222		1.4103	10	k	5%	
		223		.4103	1()	k	5%	
		224		.4684	680	k		
		225		.4684	680	k		
		226		1.4103	10		5%	
		227		.4684	680	k		
Г		228		.4392	3,9	k	5%	
		229		.4392	3,9 3,9 400	k	5%	
		230	1.912.	.001.31	400	k		
		231	1.912.	001.31	100	k	} NEG. LOG. POT.	
		232	1.912.		47	k		
Г		233	57.	11.4472	4,7	k	5%	
Г		234		1.4472	47	k	5%	
		235	1.912.	.001.31	100	k	D	
Г		236	1.912.	001.31	100	k	NEG. LOG. POT	
		237	57.	11.4105	1	М		
		238		4105	1	M		
		239		.3223	22	k	1%	
		240		.3203	20 36	k	1%	
		241		.3363	36	k	1%	
		242		.4183	18		2%	
		243		.3752	7,5	k	4%	
		244		.4684	680	k		
		245		.4103	10	k	5%	
		246		.4103	10	k	5%	
		247	1.912.	001.41	4,7	k		
		248	57.4	14.3512	5,1	k	5%	
		249		1.3512	5,1	k	5%	
L								

_	L			l				
IND	DATE	NAME						
4								
3	4.10.84	g _q						
2	22. Aug. 83	Eckert						
1	6. Jan. 83	Eckert						
0	2. Dez. 81	Eckert						
	STUDER	MOND INP	UT	4CH / 8CH	1.912.	220.00	PAGE 14	of 21

13.046.57

IND	PO	S NO		T NO	VALUE			ICATIONS/EQUIVALENT	MFR
	R	250	1.912.	001.31	100	k	7		
		251	1.912.	001.31	100	k	J NEG. LOG	POT.	
		252	57.1		1	M			
		253		.4105	1	М			
		254		.3223	22	k	1%		
		255 256		.3203	20	k	1%		
		256		.3363	36 18	k	1%		
		257		,4183	18	k	2%		
		258		.3752	7,5		1%		
		259		.4684	680	k			
		260		.4103	10	k	5%		
		261		.4103	10	k	5%		
		262		.4121	120		5%		
		263		.4121	120		5%		
		264	1.912.	001.41	4,7		LIN.	POT.	
		205	57.1	1.4102	1	k	5%		
		2006		.4103	10	k	5%		
		267		.4103	10	k	5%		
		268		.4684	680	k			
		263		.4684	680	k			
		270		.4223	22	k			
		274		.4472	4,7	k	5%		
		272		.4472	4,7	k	5%		
		273	1.912.	001.31	100	k	7		
		274	1.912.	001.31	100	k	J NEG. LOG.	POT.	
		275	57.1	1.4684	680	k			
		276		1.4223	22	k			
		277		. 4223	22	k			
		278		. 4330	33				
1		279		.3103	10	k	1%		

	1 2.0		-0 1	178			
IND	DATE	NAME					
4							l
3	4.10.84	J4					1
2	22. Aug. 83	Eckert					İ
0	6.Jan. 83	Eckert					1
0	2. Dez. 81	Eckert					
9	STUDER	MONO INP	UT	4CH / 8CH	1.912.220	. 00 PAGE 15	50F 21

	S NO			T NO	VALUE		SPECIFICATIONS/EQUIVALENT	MF
R	280	1.9	12.	001.35	10	k	POS. LOG.	
Τ	281	1.9.	12.	001.35	10		NEG. LOG. FOT.	
T	282	5	7.1	1.4332	33		5%	
T	283			.4332	3,3	k	5%	
Τ	284			.4333	33 33 33 33 33	k		
Т	285			.4332	33		5%	
	286			.4332	3,3	k	5%	
	287			.4333		k		
	288			.4471	470			
	289			.4471	470			
	290			. 4332	3,3		5%	
	291			.4332	3,3	k	5%	
T	292			- 4333	33	k		
	293			.4332	3,3 3,3 33	k	5%	
	294			.4332	3,3	k	5%	
Π	295			.4333	33	k		
	236			001.42	10		POS. LOG. POT.	
	297	5	7.1	1.4332	3,3	k	5%	
Т	298	1.9	12.	001.42	10	k	POS. LOG. POT.	
T	239	5	7.1	1.4332	3,3 10	k	5%	
	300	1.9.	12.	001.42	-10	k	POS. LOG. POT.	
	301	5	7.1	1.4332	3,3 4,7	k	5%	
	302	1.9.	12.	001.43	4,7	k	POS. LOG.)	
	303	1.9.	12.	001.43	10	k	POS. LDG. POT.	
	304	1.9	12.	001.43	10		NEG. LDG.	
	305	5	7.1	1.4332	33		5%	
	306			.4332	33 33	k	5%	
	307			.4333	33	k		
	308			. 4332	33	k	5%	
	309			.6106	10	М		

IND	DATE	NAME	l				
(4)							
3	4.10.84	44					
2	22. Aug. 83	Eckert					
0	6. Jan. 83	Eckert					
0	2. Dez. 81	Eckert					
5	TUDER	MONO INF	rUT	4CH / 8CH	1,912.	220.00	PAGE 16 OF

IND	POS NO		VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	R 310		10 M		
	311	.4104	100 k		
	312	. 4333	33 k		
	313	. 4332		5%	
	314	.6106			
	315	.6106	10 M		
	316	.4104	100 k		
	317	+333	33 k 33 k 40 M		
	. 318	. 4332	<i>3,</i> 3 k	5%	
	319	.6106			
	320	.6106	10 M		
	321	.4104	100 k		
	322	. 4333	33 k		
	323	.4332	33 k 3,3 k	5%	
	324	.6106	40 M		
	325	.6106	10 M		
	326	.4104	100 k		
	327	-4333	33 k	*	
	328	.4332	3,3 k 10 M	5% *	
	329	.6106	10 H	*	
	330	.6106	10 M	*	
	331	.4104	100 k	*	
	332	. 4333	33 k	*	
	333	.4332	33 k 40 M	5% *	
	334	.6106	10 M	*	
	335	.6106	10 M	*	
	336	. 4104	100 k	*	
	337	.4333	33 k	*	
	338	.4332	3,3 k 10 M	5% *	
	339	.6106	10 M	*	

IND	DATE	NAME				
4		1				
3	4.10.84	4a				
2	22. Aug. 83	Eckert				
①	6. Jan. 83	Eckert			* ONLY 8CH	
0	2. Dez. 81	Eckert				
5	STUDER	MONO IN	ZIT	4CH / 8CH	1.912.220.00	page 17 of 21

IND	POS NO	PART NO	VALUE		SPECIFICATIONS/EQUIVALENT	MFR
	R 340	57.11.6106	10	М	*	
	341	1 1.4104	100	k	*	
	342	.4333	33	k	*	
П	343	1 1.4332	33	k	5% *	
	344	.6106		М	*	
	345	6106	10	М	*	
Г	346	.4104	100	k	*	
	347	.4333	33	k		
	348	.4103	10		5%	
	319	.6106	10	М		
	350	.4333	33	k		
	351	.4103	10		5%	
Г	352	.6106	10	М		
	353	.4333	33	k		
	354	.4103	10		5%	
	355	.6106	10	M		
	356	. 4333	33	k		
	357	.4103	10		5%	
	358	.6106	10	M		
	359 320	.4104	100	k		
	360	.4105	1	М		
	361 362 363	.4105	1	M		
	362	.4105		M		
	363	1 .4104	100	k		
	364	57.99.0209	5,6		PTC	
	365 366	57.99.0209	56 50		PTC	
L	366	57.99.0206	50		PTC	
	367 368	57.99.0209	5,6		PTC	
	368	57.11.4331	330			
	369	1 (.4103	10	k		

L	_		<u>`</u> _			
11	ND	DATE		NAME		
-	4					
1	3	4,10.	84		R	
0	2	22. Aug.	83	Eckert		
-	D	6. Jan.	83	Eckert		* ONLY 8CH
1	0	2. Dez.	81	Eckert		
ſ	9	STUDE	ER	MONO	INPUT	4CH / 8CH 1.912.220.00 PAGE 18 OF 21
- 1				1		

13.046.578

NDI P	os NO	PAR"		VALUE		SPECIFICATIONS/EQUIVALENT	MFR
	370	57.1	1.6335	3,3	М		
	372		.4183	18	k	5%	
	373		.4104	100	k		
	374		. 4104	100	k		
	375		.4105	1	М		
	3 7 6		.4473	47	k		
	377		.4331	330			
\neg	378		.4333	33	k	OPTIONAL	
1	379		.4271	270			
1	380		.4223	22	k		
7	381		.3682	48 48 33 3,3	k	1%	
1	382		.4182	1,8	k		
1	383		. 4332	3,3	k		
1	384		. 4332	3,3	k		
2	385		.4102	1	k		
ς	101	1.912	298.01	1*9		ROTARY	
Ť	102	1.912.	298.02	3×4		ROTARY	
\top	103	55.0	1.0159	·1p		TOGGLE	
	104	55.0	1.0159	1ρ		TOGGLE	
	105			1p 0	N	COMBINED WITH R189/R190	
	108			10 O	N	, R202/R203	
	107			20		1 R220	
T	108			2p		u v R232	
\Box	109			2р 2р 2р		ı . R 247	
П	111			1p			
П	11			1p		R 264	
\sqcap	11	55.	15.0003	2ρ		PUSHBUTTON	
\Box		55.1	33.0303			KNOB RED INDIC	
П	41	3 55.	15.0003	2р		PUSHBUTTON	

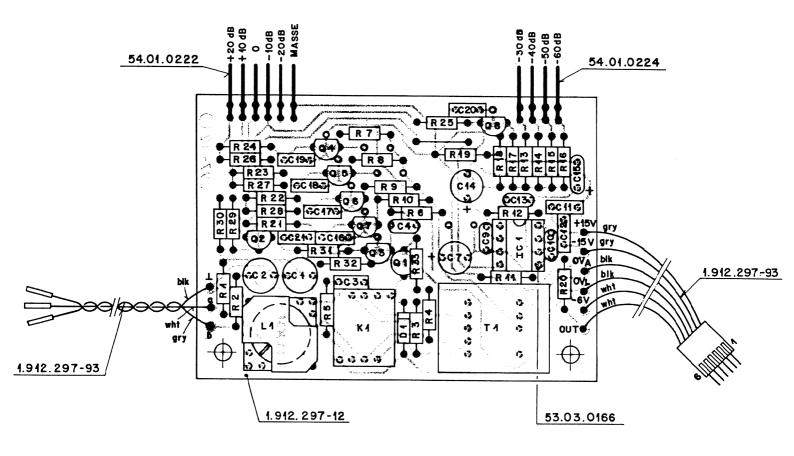
1	1 1131 23	. 13.0000	2.5					
IND	DATE	NAME						
4								
3	4.10.84	Ja						
2	22. Aug. 83	Eckert						
1	6, Jan. 83	Eckert						
0	2. Dez. 81	Eckert						
•	STUDER	MONO INF	PUT	4CH / 8CH	1.912.	220.00	page 19 of 21	

ND POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MF
	55.03.0303		KNOB RED INDIC	
S 114			COMBINED WITH R296	
115			и и R298	
116			1 R300	
117			* R302/R303/R304	
118	55.45.0002	2ρ	PUSHBUTTON *	
	55.03.0303		KNOB RED INDIC *	
119	55.15.0002	2ρ	PUSHBUTTON	
	55.03.0303		KNOB RED INDIC	
120	55.45.0002	2р	PUSHBUTTON	
	55.03.0303		KNOB RED INDIC	
121	55.15.0002	2ρ	PUSHBUTTON *	
	55.03.0303		KNOB RED INDIC *	
122	55.45.0002	20	PUSHBLITTON *	
	55.03.0303		KNOB RED INDIC *	
123	55.15.0002	2р	PUSHBUTTON	
	55.03.0303		KNOB RED INDIC	
124	55.15.0002	2р	PUSHBUTTON	
	55.03.0303		KNOB RED INDIC	
125	55.45.0002	2р	PUSHBUTTON *	
	55.03.0303		KNOB RED INDIC *	
126	55.15.0112		PUSHBUTTON	
	55.45.04.46		BEZEL BLACK	
	55.45.0422		KNOB RED	
127	55.15.0113		PUSHBUTTON	
	55.45.01.46		BEZEL BLACK	
	55.45.0129		KNOB WHITE	
ND DATE	I NAME I			

ND	DATE	NAME	1			
a						
3	4.10.84	4	a			
2	22, Aug. 83	Eckert				
D	6. Jan. 83	Eckert			* ONLY 8CH	
O	2. Dez. 81	Eckert				
5	STUDER	MONO II	NPUT	4CH / 8CH	1.942.220.00	page 20 of 21

ND	POS			RT NO	VAL	JE	SPECIFICATIONS/EQUIVALENT	MFR
	T	101	1.022	. 419.00				
7								
1	XIC		5.3	03 0466	86)	IC SOCKET	_
T	1110		53	03.0166 03.0167 03.0168	146		1	_
1			52	03.010.	160	' —		
+			- 33.	03.0160	101			
\dashv					ļ			
4					ļ			
4					ļ			
_								
-								
		_						
7			MODIFICA	TIONS				
+			ווסטוויונר	1110110				
1	6.30	92	NI.	•1. 1	h 11			
4	b. 30	n.a	1/0	interrupt o		دببلح	hes EQUALIZER and PAN	
\dashv			R3	87	open		118	
4			R3		open	→	3\3	
_			R3	84	open	_	<i>3</i> ન્ડ	
\perp								
2	22.A	4.83	Imor	ovement of 13	oscillali	On		
T			C 2	13	open	>	22nF	
1			C 2	45	open	-,	22nF	
7			R3	85	open	_	NΩ	
7			,,,,	~	~ ~			_
\dashv								

IND	DATE	NAME	- 1					
④			4					
3	4.10.84		1/4					
2	22. Aسهد 83	Eckert						
0	6. Jan. &3	Eckert						
0	2. Dez. 81	Eckert						
9	STUDER	MONO	INP	JT	4CH/8CH	1.912	.220.00	page 21 of 21



#	Norm-Nr.:		2	Güte:		9					(3)
Werkstoff	DIN-Bez.:		erlike	Beh.:		denu					(2)
š	Abmessung		ĉ	Don.		4					0
Zuş	gehörige Unterlag	jen:	Fit	eimasstoteranz:	Maffstab:	ą	7.6.82	Но	16	ae	0
P	L			±.	2:1	¥	Datum	Gez.	Gepr.	Ges.	Index
Ers	salz für:		En	setzt durch:		Ko	pie für:				
	RECENSIONE ZÜRICH ÜÜRCEP			one Am	plifier	Nummor:	1.912.	29	7-	00)

ND POS NO		PART NO	VALUE		L	SPECIFICATIO	NS/EQUIVALENT	MFR
C ,	5	9.05.110	2 1	n	1%	630V	PP	
	2 5	9.05.110	2 1	n	1%	630V	PP	
	3 5	3.06.010	2 1	n		63V	PE	
	+ 5	9.34.422	1 220	ρ			CER	
				_				
	7 5	3.22.522	22	μ		16V	EL	
			<u> </u>					
	3 5	9.34.222	0 22	р			CER	
1) 5	9.34.222	0 22	ρ			CER	
1	1 5	9.34.556	1 560	р			CER	
1	2 5	9.34.556	560	ρ			CER	
1	3 5	9.34.433	1 330	ρ			CER	
1	4 5	59.22.522	0 22	м		16V	EL	
1	5 5	59.26.047	0 47	μ		63V	SAL	
1	6 5	9.06.068	2 6,8	n		€3V	PE	
1	7 5	9.06.068	2 6,8	n		637	PE	
1		9.06.068	2 68	n		637	PE	
1	3 5	9.06.068	2 6,8 2 6,8 2 6,8 2 6,8 2 6,8 2 6,8 2 6,8	h		631/	PE	
2		9.06.068	2 68	n		631	PE	
2	1 5	9.06.068	2 68	n		₩.	PE	
	+		 		-			+-
D ′	5	0.04.012	5 111 4448	}				
+	+				-			-
JC /	1 5	0.05.024	4 NE 5534	AN		FOM M	OISE	
+	+				-			
K	Ę	6.04.017	5V					

_		-		-									
	L '	11	.022	.20	7.00				HF	SYM	COIL		
						-							
		T											
		Τ	-										
	Q	1	50.	03.	0515	BC	307						
		2			0436								
		3	50.	03.	0350	J	112						
		4	50 .	03.	03.50	J	112						
	,	4 5 6 7	50.	03.	0350	J	112						
		G	50	UO.	02 EU	ר	1AD						
		7	50.	03.	0350	J	142	_				•	
		8	50.	03.	0350	J	112						
		\top											
		\top					-	-					
		\top											
	R	1	57.	11.	3103		10	k	1%				
		2	57.	11.	3103		10	k	1%				
	:	3	57.	11.	3432		43	k	1%			•	
		4	57.	11.	3432		43		1%				
			57.	11.	4152		15	k	5%				
Г		5	.57.	11.	4123		43 43 45 42	k	5%				
	-	7	57.	11.	4821		820		2%	-			
	1	3	57.	11.	3302		820 3	k	2%				
	-	3	57.	11.	4153		15	k	2%				
	1	0	57.	11.	4153		15		2%				
	1	1	57.	11.	4223		22	k					
	1	2	57.	11.	4334		330	k	5%				
	1	3	57.	11.	4152		1,5	Ł	2%			-	
	1	4	57.	11.	.3361		360	ē.	2%				
	1	5	57.	11.	3111		110		2%				
IIND		ATE			AME								

IND POS NO

PART NO

VALUE

SPECIFICATIONS/EQUIVALENT

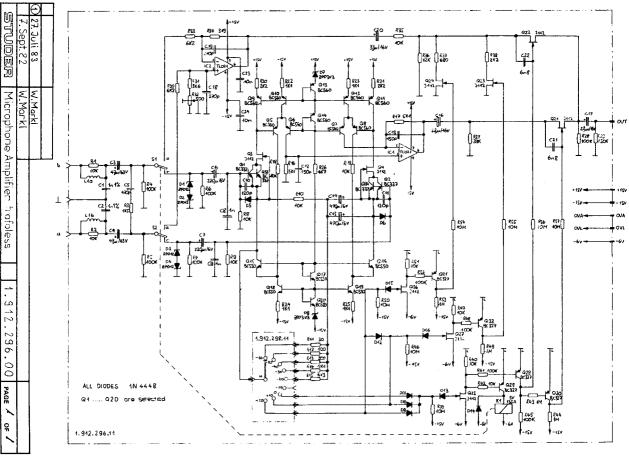
MFR |

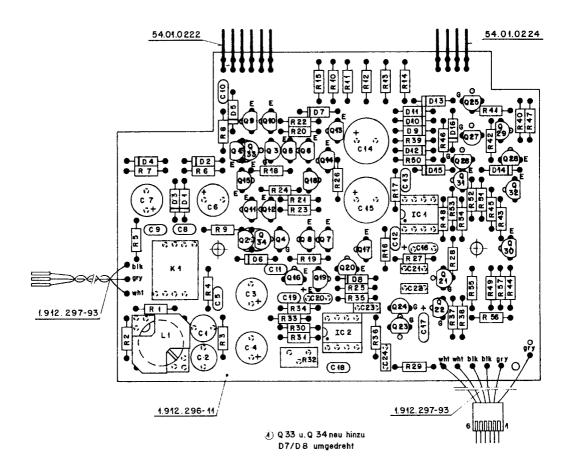
	OS NO	PART NO	VALUE		SPECIFICATIONS/EQUIVALENT	MFF
R		57.11.4330	33		2%	
	17	57.41.4152	45	k	2%	
\top	18	57.11.3332	33	ķ	2%	
$\neg \top$	19	57.11.4213	33 22	k		
	20	57.44.4330	33			
	Ж	57.11.6106	10	H		
	22	57.11.6106	10	М		
	23	57.41.6186	10	H		
	24	57.11.6106	10	М		
	25 26	57.41.6106	10	M		
	26	57.11.4104	100	k		
	27	57.11.4104	100	k		
	28	57.11.4104	100	k		
	29	57.11.4104	100	k		
	30	57.11.4104	100	k		
	31	57.11.6106	10	H		
	32	57.11.4223	22	ķ		
	33	57.11.4104	100	k		
				_		
S	1		1ρ			
	2		1p		S COMBINED WITH KY	
\sqcup						
<u> </u>	<u>,</u>					
	1	1.022.417.00			MIC INPUT TRAFO	-
Н.					10 context	
\rangle	(IC	53.03.0166	8p		IC SOCKET	
$\vdash \downarrow$						

IND	DATE	NAME				
④			CER: CERAMIC			
3			EL : ELECTROLYTI	C		
2			PE : POLYESTER			
<u> </u>			PP : POLYPROPYL	EN		
0	8,4.82	Eckert			-	
g	TUDER	MICROPHON	IE AMPLIFIER	PL	1.912.297.00	PAGE 1 OF 3

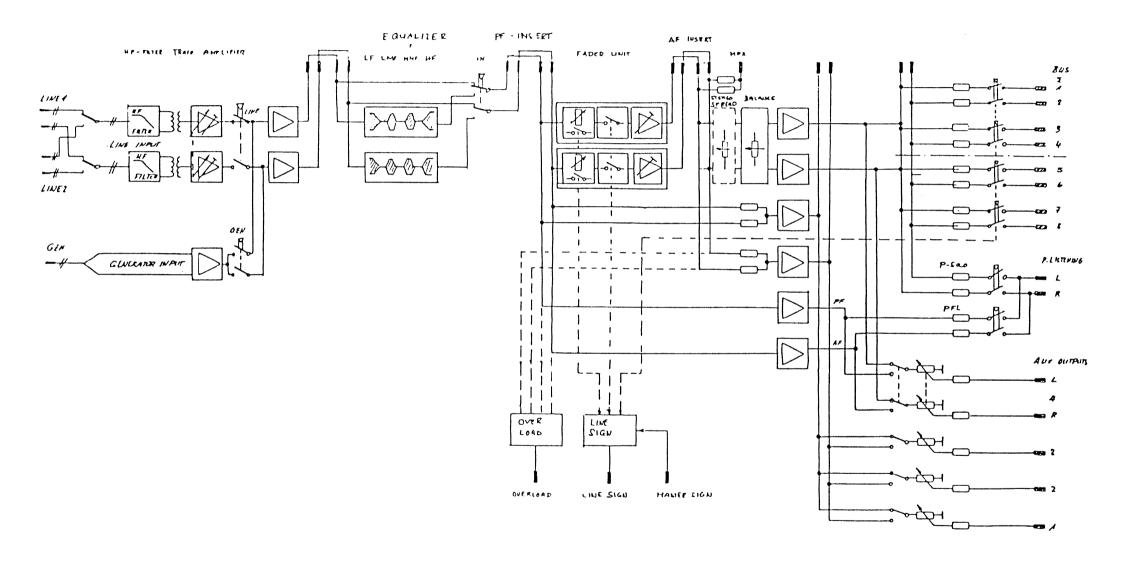
IND	DATE	NAME			
④					
3					
2					
1					
0	8.4.82	Eckert			
\$1	ruder	MICROPHON	IE AMPLIFIER	PL	1.912.297.00 PAGE 2 OF 3

IND	DATE	NAME			
4					
3					
2					
0					
	8.4.82	Eckert			
S	TUDER	MICROPHO	VE AMPLIFIER	PL	1.912.297.00 PAGE 3 OF 3

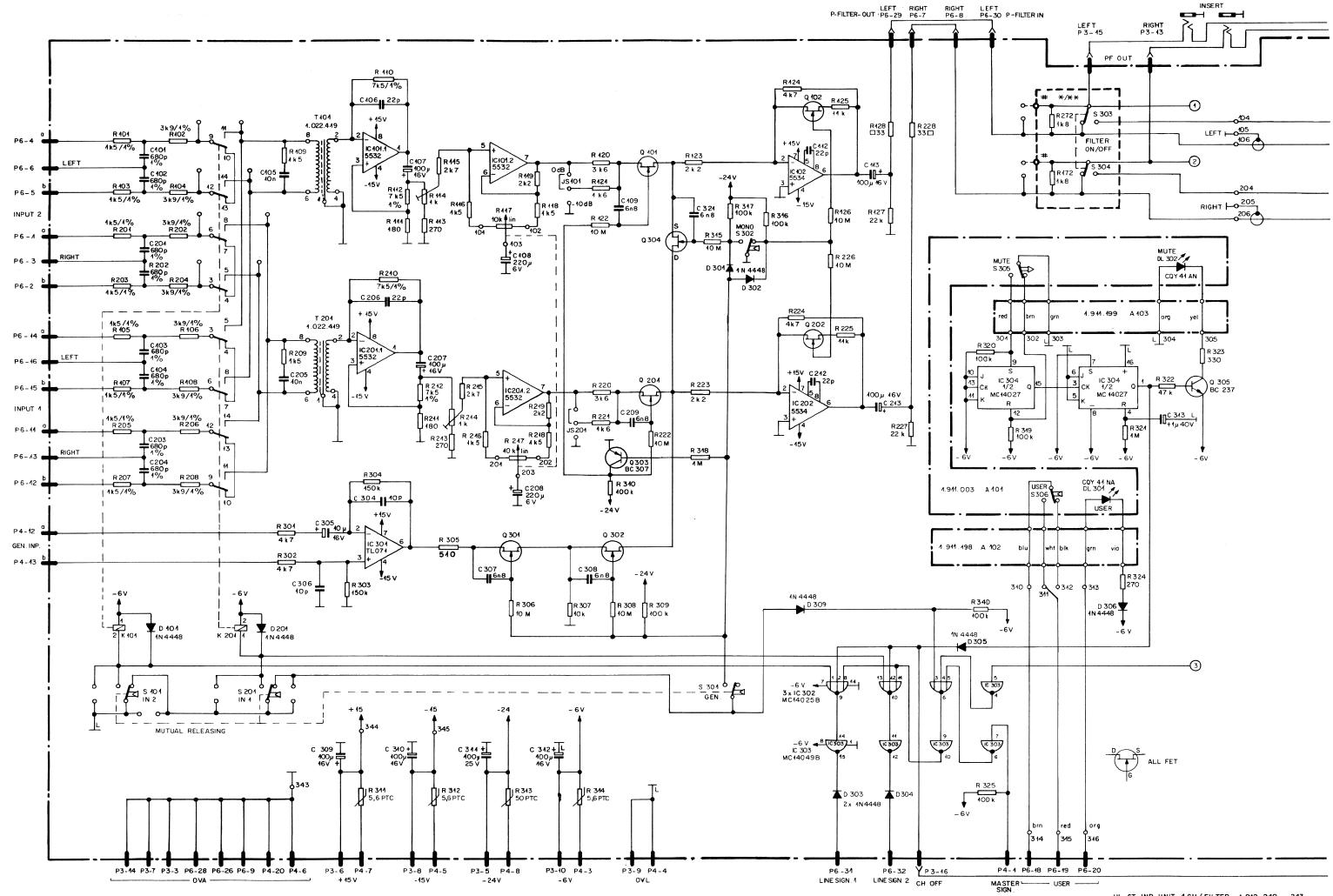


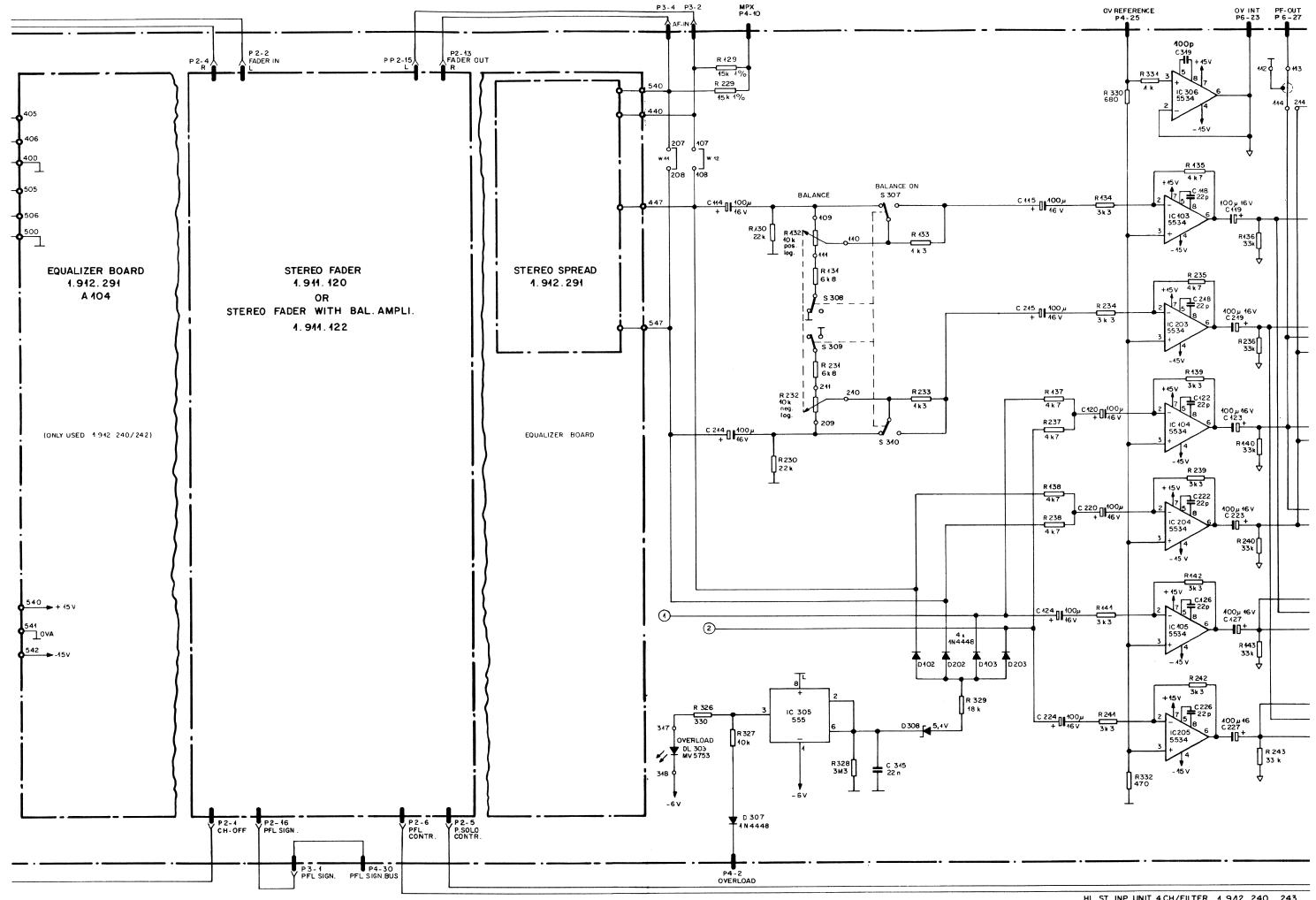


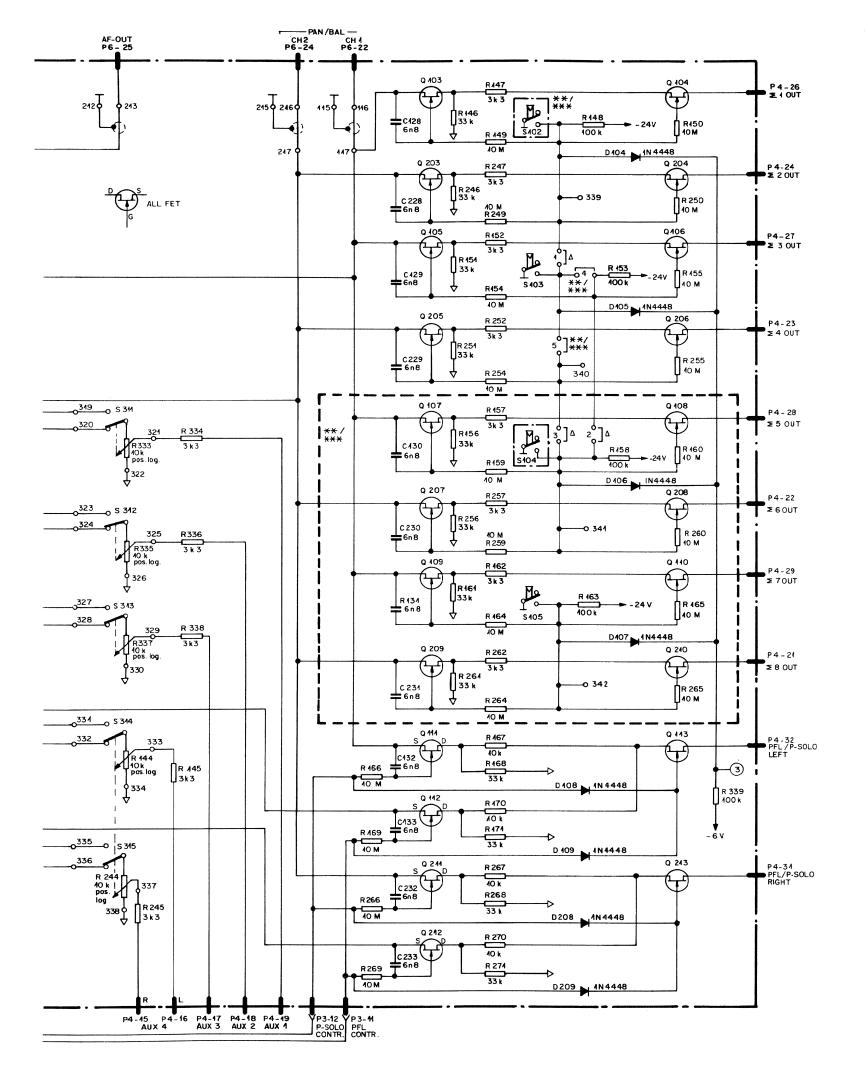
IND POS NO PART NO VALUE SPECIFICATIONS/SQUIVALENT MFR	INDIPOS NO FART NO VALUE SPECIFICATIONS/EQUIVALENT MFR	MID POR NO PART NO VALUE EPECIFICATIONS/EDUIVALENT MFR
C 1 59.05.1102 1 n 1% 63V PP 2 59.05.1102 1 n 1% 63V PP	Q 5 1, 010, 038, 50 BC 560 PNP LOW NOISE 61, 010, 038, 50 BC 560 PNP LOW NOISE	R31 57.11,33623,6 K 2 ½ MF 32 58.01.7501 500 TRIM MG
2 59.05.1102 1 n 1% 63V PP 3 59.22.847047 µ 63V EL	714 040 038 50 BC 560 PNP LOW NOISE	33 57.11.3622 6,2 K 2 % MF
4 59 22 8470 47 A3V F	81.010.038.50BC560 PNP LOW NOISE	34 57.11.43923,9 K 2 % MF
5 59.34.5471470 p CER	① 91.010.038.50 BC560 PNP LOW NOISE ① 101.010.038.50 BC560 PNP LOW NOISE	33 57. 11. 3622 6,2 K 2 7. MF 34 57. 11. 4392 3,9 K 2 7. MF 35 57. 11. 4193 10 K 2 7. MF 36 57. 11. 4193 12 K 2 7. MF
5 55.34.5471470 p	81.010.038.50 RC560 PAP LOW NOISE () 91.010.038.50 RC560 PAP LOW NOISE () 101.010.038.50 RC560 PAP LOW NOISE () 101.010.038.50 RC560 PAP LOW NOISE () 111.010.038.50 RC560 PAP LOW NOISE () 121.010.038.50 RC560 PAP LOW NOISE () 131.010.038.50 RC560 PAP LOW NOISE () 131.010.038.50 RC560 PAP LOW NOISE	36 57.11.412312 K 2 7. MF 37 57.11.3681680 2 7. MF
8 59.06.0102 1 n PETP	① 121,010,038.50BC560 PNP LOW NOISE	38 57.11.42222,2 K 2 % MF
9 59.06.0102 1 n PEIP		39 57.11.610610 M
10 59.34.4124120 p CER	14 1.010.038.50 BC560 PNP LOW NOISE 15 1.010.039.50 BC550 NPN LOW NOISE	40 57.11.4103 10 K
11 59.34 4121120 p CER 12 59.34.4151150 p CER	161.010.039.50 BC550 NPN LOW NOISE	41 57.11.4104 100 K 42 57.11.4103 10 K
142 50 3/ /454/450 - CED	171.010.039.50BC550 NPN LOW NOISE	43 57.11.41051 M
14 59.22.2471470 µ 6 V EL 15 59.22.2471470 µ 6 V EL	18 1. 010. 039. 50 BC 550 NPN LOW NOISE	44 57.11.41051 M 45 57.11.4104100 K
15 59.22.2471470 µ 6 V EL 16 59.26.122022 µ 10 V SAL	O 18/1.010.039, 50 8550 NPN LOW NOISE O 201.010.039.50 8550 NPN LOW NOISE O 201.010.039.50 8550 NPN LOW NOISE	45 57.11.4104100 K 46 57.11.610610 M
16 59.26.122022 u 10 V SAL 17 59.26.122022 u 10 V SAL	21 50.03.0350 J112 J-FET	47 57.11.4103.10 K
18 59,34,4271 270 p CER	22 50.03.0350 J112 J-FET	48 57.11.4104 100 K
19 59.34,4271270 p CER 20 53.26.133033 u 10 V SAL	23 50.03.0350 J112 J-FET 24 50.03.0350 J112 J-FET	49 57.11.41051 M 50 57.11.610610 M
21 59.06.0682 6.8 D PETP	25 50.03.0350 J112 J-FET	51 57.11.4103 10 K
22 59.06.0682 6,8 n PETP	26 50.03.0350 J112 J-FET	52 57.11.4104100 K
23 59.06.0103 10 n PETP 24 59.06.0103 10 n PETP	27 50.03.0350 J112 J-FET 28 50.03.0351 BC327 PNP	53 57.11.41051 M
24 59.06.0103 10 n PETP	2+1 30.03.03.03112 3-FET 2.5 50.03.03501312 3-FET 2.6 50.03.03501312 3-FET 2.7 50.03.03501312 3-FET 2.8 50.03.03501312 3-FET 2.8 50.03.0351 80327 PNP 2.3 50.03.0351 80327 PNP 3.0 50.03.0351 80327 PNP 3.1 50.03.0351 80327 PNP	54 57.11.6106 10 M 55 57.11.6106 10 M
	30 50.03.0351 BC327 PNP	56 57.11.610610 M
	31 50.03.0354 8C327 PNP	57 57.11.610610 M
D 1 50.04.1117ZPD12 2 50.04.1117ZPD12	32 50.03.0351 PC 327 PNP (3) 331.010.037.50 PC 337 NPN LOW NOISE	
3 50.04.1117EPD12	① 341,010,037.50BC337 NPN LOWNOISE	
	IND DATE NAME	IND DATE NAME
INIO DATE NAME	0	(O)
0		
① 27.Juli 83 W.Markl	① 27. Juli 83 W. Markt	① 27. Juli 83 W. Mark!
O 3.Sept. 82 W.Markl	0 10. Sept82 W. Markl	○ 10.Sept.82 W.Marki
STUDIER Mic Amp trafoles: PL 1.912.296.00 PAGE 1 of 6	STITURER Mic Amp trafoless PL 1.912.296.00 PAGE 3 OF 6	STUDER Mic Amp trafoless PL 1.312.296.00 PAGE 5 OF 6
<u> </u>	to the second se	
INDIPOS NOI PART NO I VALUE I SPECIFICATIONS/ZOUVALENT MER I	INDIPOS NO PARY NO VALUE SPECIFICATIONS/EQUIVALENT MFR	INDIPOS NO PART NO VALUE SPECIFICATIONS/EQUIVALENT MAFR
IND NOS NO	IND FOR NO	S 1 1p KOMBINED WITH K1
PART NO	NO PART NO	
PHO FOS NO	NO PART NO	S 1 1p KOMBINED WITH K1
PHO FOS NO	NO PART NO	\$ 1 1 ₀ KOMBINED WITH K1 2 1 _p KOMBINED WITH K1
PHO FOS NO	NO PART NO	S 1 1p KOMBINED WITH K1
PART NO	NO PART NO	\$ 1 1 ₀ KOMBINED WITH K1 2 1 _p KOMBINED WITH K1
PART NO	NO PART NO	\$ 1 1 ₀ KOMBINED WITH K1 2 1 _p KOMBINED WITH K1
PART NO	NO PART NO	S 1
PART NO	NO PART NO	S 1
MISPINGRION	NOLFOR NO. PART NO. VALUE SPECIFICATIONS/ROLIVALENT MFR R	S 1
NUMBER PART NO	NOLFOR NO. PART NO. VALUE SPECIFICATIONS/ROLIVALENT MFR R	S 1
NO PART NO	NOLPOR NOL	S 1
NED POSINO PART NO	NO PART NO	S 1
NOTE PART NO	NO PART NO	S 1
NED FORNO PART NO VALUE PRECIFICATIONE/ROLLEVAL DIT NETR	NO PART NO	S 1
NO PART NO	NO PART NO	S 1
NED FORNO PART NO VALUE PRECIFICATIONE/ROLLEVAL DIT NETR	NO PART NO	S 1
NED POSINO PART NO	NO PART NO	S 1
INDIPION PART NO	NO PART NO	S 1
NO PART NO	NO PART NO	S 1
NED TOO NO NAME NO NAME NO NAME N	NO PART NO	S 1
INDIPION PART NO	NO PART NO	S 1
	NO PART NO	S 1 1p KOMBINED WITH K1 2 1p KOMBINED WITH K1 XIC 53.03.0166 8p IC-SOCKET Modifications O 2778 Improvement of the SIN Ratio
INDIPION PART NO	NO PART NO	S 1
NED TOO NO NO NO NO NO NO N	NO PART NO	S 1 1p KOMBINED WITH K1 2 1p KOMBINED WITH K1 XIC 53.03.0166 8p IC-SOCKET Modifications O 2778 Improvement of the SIN Ratio
NED POS NO	NO PART NO	S 1 1p KOMBINED WITH K1 2 1p KOMBINED WITH K1 XIC 53.03.0166 8p IIC-SOCKET MODIFICATIONS © 2778 Improvement of the SIN Ratio
NO PART NO	NO PART NO	\$ 1
	NO PART NO	S 1 1p KOMBINED WITH K1 2 1p KOMBINED WITH K1 XIC 53.03.0166 8p IIC-SOCKET MODIFICATIONS © 2778 Improvement of the SIN Ratio

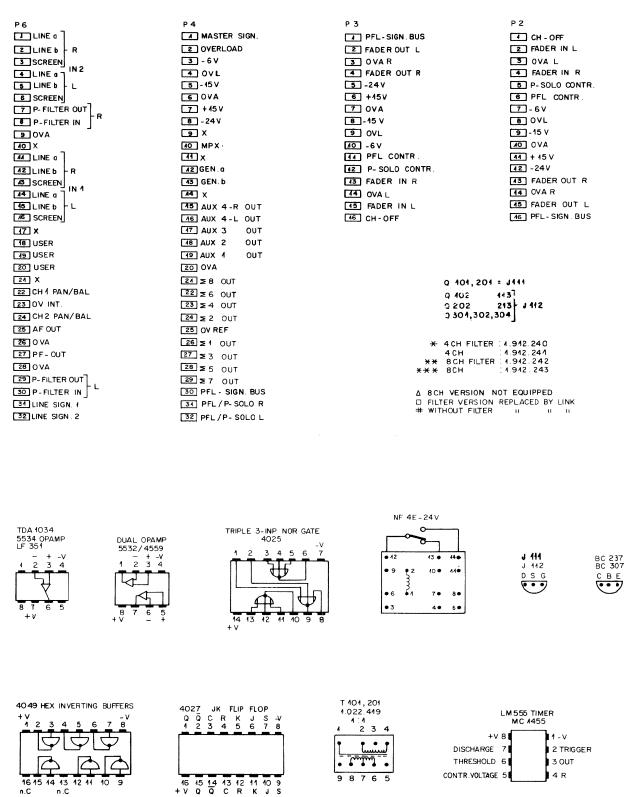


15.11.82	frija								
STUDE	R	STEREO	HOCHI	PEGEL ENGA	ANGSEINIIEIT	1.	912	. 24X	PAGE



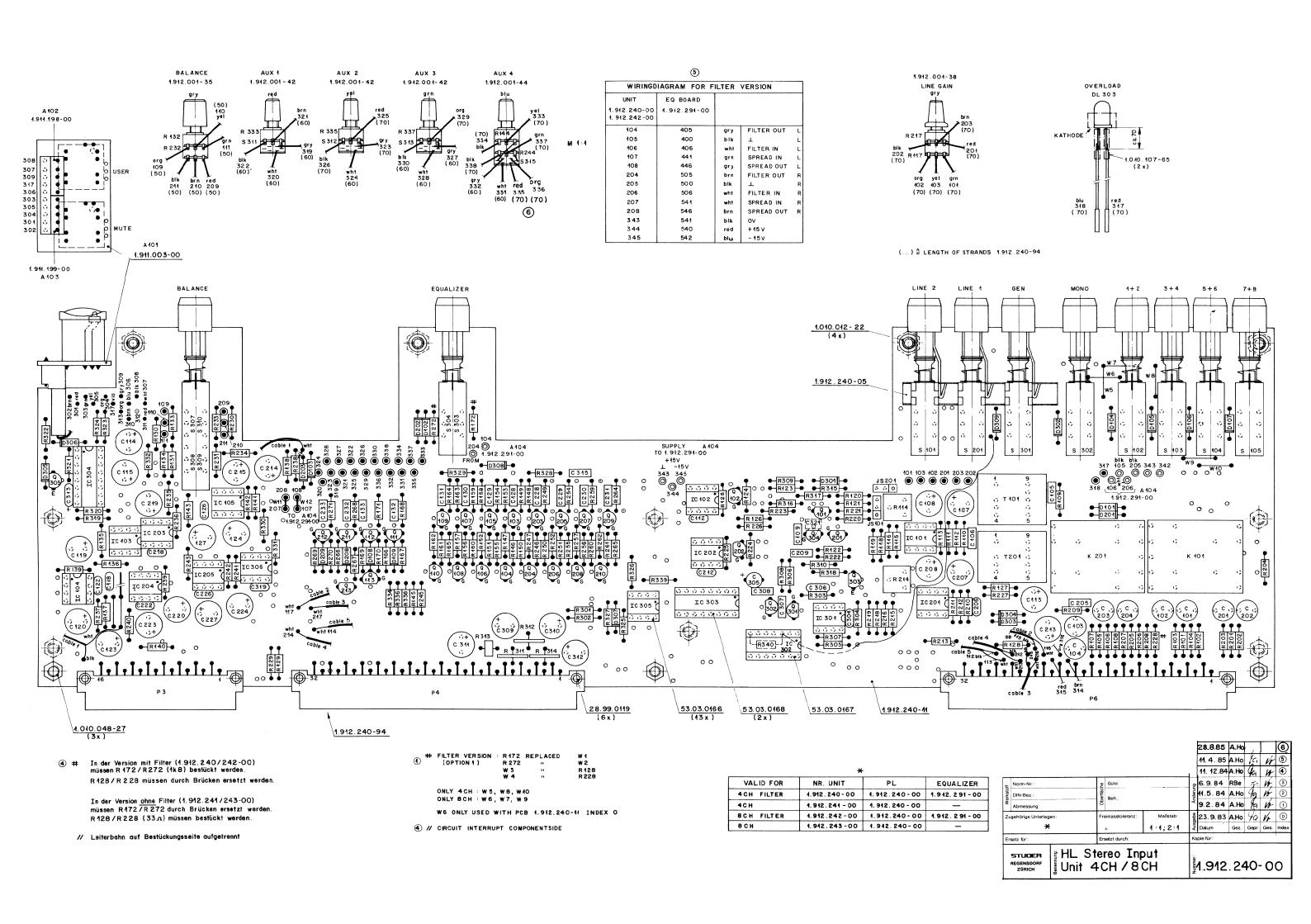


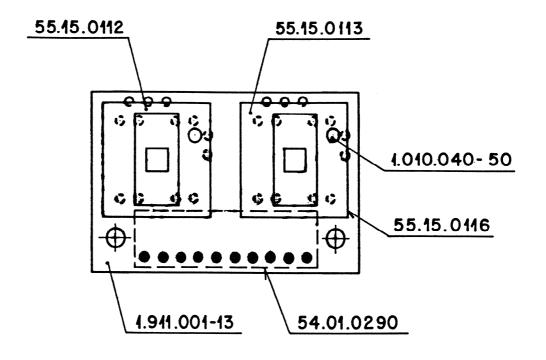




BOTTOM VIEW

DATE	14.12 84	11 4 85				
SIGN	ul	mt				
DATE:	9. 5. 83	26.2.84	11.5.84	6.9.84	4.40. B4	
SIGN:	We.	ute	w	ml	ml	PAGE 3 OF 3
STUDER REGENSDORF ZÜRICH		EREO INI FILTER	1. 912.240243			





STUDER REGENSDORF ZÜRICH PUSHBUTTON Board N-L								00)3-	- O	
Er	entz für:		+	±	2:1	Ž	Datum pie für:	Gez.	Gepr.	Ges.	Index
Zu	gehörige Unterlag	jen:	Freimasstoleranz: Maßstab:					Но	W		0
`	Abmessung:		å		۲					1	
Werkstoff	DIN-Bez.:		erfia	Beh.:							2
#	Norm-Nr.:		۽	Güte:	2					3	

IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	A 101	1.911.003.00		PUSHBUTTON BOARD	ST
	102	00.800.112.1 1.941.128.00 1.941.119.00		CONNECTING CABLE2	и
	103	1.911.199.00		h h /	N
1	104	1.912.291.00		EQUALIZER BOARD OPTION 1	+ 15
\neg					
\dashv					
\dashv					
\dashv					
\dashv					
- 1	- 1	I			

IND	DATE	NAME .						
4	41.12.84	5 H.4. 85/2	NOITAC	1		4CH/FI	ITER: 1.91	12.240.00
3	4.10.84	44	with Fil	ter		4CH	:1.91	12.241.00
2	11. 5. 84	1/2				8CH/FIL	TER :1.91	12.242.00
①	9.2.84	40				8CH	:1.31	12.243.∞
\circ	48.6.82	TAMAS fa	ST: S	TLIDER				
W.	TUDER	4L ST INFUT	UNIT 40	.H/FILTER	PL	1.912.	240.00	PAGE 1 OF 13

IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	C.01	59.05.1681	680 p	1% 500V PP	
L	.02	59.05.1681	g 086	1% 5∞V PP	
	.03	59.05.1681	680 p	1% 500 V PP	
	.04	59.05.1681	680 p	1% 500V PP	
	.05	59.06.0103	10 n	10% 63V PE	
	.06	59.34.2220	22 p	CER	
	.07	59.22.4404	100 JU	16V EL	
	80.	59.22.2221	220 M	6,3V EL	
	.09	59.06.0682	6,8 n	63 V PE	
L					
	.12	59.34.2220	22 p	CER	
	.13	59.22.4101	100 M	167 EL	
	.44	59.22.4401	100 M	16V "	
	.15	59.22.4101	100 NI	16V u	
	.18	59.34.2220	22 p	CER	
	.19	59.22.4101	100 ju	16V EL	
	.20	59.22.4101	100 M	16V EL	
	.22	59.34.2220	22 p	CER	
	.23	59.22.4101	100 Ju	16V EL	
	.24	59.22.4101	100 Ju	16V EL	
	.26	59.34.2220	22 p	CER	
	.27	59.22.4161	100 11	16V EL	
	.28	59.06.0682	6,8 n	10% 63V PE	
	.29	59.06.0682	6,8 n	A II II	
1	.30	59.06.0682	6,8 n	* " " *	

IND	DATE	NAME ,	L			
4	11.12.84	(5) 11,4.85 %	CER:	CERAMIC		
3	4.10.84	40	EL:	ELECTROLY	YTIC	
2	11.5.84	Vo.	PE :	POLYESTER	٦	
1	9.2.84	to	₽Ð:	POLYPROPY	LEN	* only 8 CH
0	18.6.82	TAMAS %				7
g	TUDER	HL ST INPU	T UNIT	4CH/FILTER F	L 1.942.24	0. 20 PAGE 2 DE 13

IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
1	C.31	59.06.0682	6,8 n	63V PE \star	
	.32	59.06.0682	6,8 n	63V PE	
	.33			63V PE	
	C304	59.34.1100	10 p	CER	
	305	59.30.4100	10 /4	16 V EL	
	306	59.34.1100	10 p	CER	
	307	59.06.0682	6,8 'n	63V PE	
	308	59.06.0682	6,8 n	63V PE	
	309	59.22.4101	100 N	16 V EL	
	310	59.22.4104	100 M	ti ti	
	344	59.22.5101	100 JU	25V ·	
	312	59.22.4101	100 M	16V "	
	343	59,26.9109	1 11	6V SAL	
	315	59.06.0223	22 n	63V PE	
					1
3	319	59.34.4101	100 p	CER	
2	321	59.06.0682	6,8n	63V PE	
					1

IND	DATE	NAME /	1								
4	11.12.84	5) 41.4.85 /G	JER	:	CERAMIC						
3	4.10.84	90	EL	:	ELECTRO	LYT	1C				
2	11.5.84	Vo	PE	:	POLYEST	ER					
1	9.2.84	40	SAL	:	SOLID AL	UMII	NILIM		×	only	8CH
\bigcirc	24.6.82	TAMAS \$	1							′	
		HI ST INDIT	LIMIT		KH/EUTER	DI	1 045	000	^^	-	ck <i>9</i>

IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	D.01	50.04.0125	4N 4448		
	.02	50.04.0125	8PPPNN		
	.03	50.04.0125	4N4448		
1	104	50.04.0125	1N 4 4 4 8	*	
	105	50.04.0125	4N 44 48		
	106	50.04.0125	1N4448		
1	107	50.04.6125	1N 4448	*	
	.08	50.04.0125			
	.09	50.04.0125	4N 4443		
	D301	50.04.0125	41141418		
	302	50.04.0125	1114448		1
	303	50.04.0125	/N4448		
	304 305	50.04.0125			
	306	50.04.0125 50.04.0125			
	307	50.04.0125			+
	308	50.04.1112	Z 541	400 mW	
-	309	50.04.0125	1N 4448		
	DL301	1.010.040.50	CQY 41 NA		ST
-	302/	1.010.040.50	CQY41 NA		ST
\dashv	303	50.04.2111	ECTC VIT		-
1			1		

IND	DATE	NAME _					
4	11.12.84	511.4.85%	ST :	STUDER			
3	4.10.84	40]				
2	11.5.84	Vv-					
1	9.2.84	40				* only	, 8CH
\bigcirc	21.6.82	TAMAS &				<i>'</i>	
S	TUDER	HLST INPUT	CINIT	ICH/FILTER	PL 1.	912,240.00	PAGE 4 OF 13

IND	POS NO		PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	IC.01	50	.09.0106	NE 5532	LN DUAL OP-AMP	SIG
	.02	50	.05.0243	NE 5534	OP-AMP	la la
	εο.	50	.05.0243	NE 5534	¥	`
	٠٥٤	50	.05.0243	NE 55:34	u u	1
	.05	50	05.0243	HE 5534	1	ls.
	IC 301	50	.09.0103	TL 071	FET OP-AMP LF 351	TI
	302	50	.07,0012		3-IN NOR GATE MOS	MOT, FC
	363		.07.0049		HEX INV. BUFFER MOS	. 4
	304		. 07.0027	4027	DUAL J-K FF MOS	11 12
	305		.05.0158		TIMER	SIGNE
	306		.05.0243		9MA-40	SIG
	JS .01	54	.01 .0020	PIN		
Г			.01.0021			
	K.01	56	.04.0146	NF-4E-6V		
	Р 3	54	.11.2007	2 * 8	1/2 EURO B-TYPE	BU
	Ч		.01.0359		ELIRO B-TYPE	4
	6	54	.01.0359	2 * 16	EURO B-TYPE	n
IND	I DA1		NÁME ,	 I		
(4)	11,12	. 84	3) 41.4.85 E	SIG : S	IGNETICS BU: BURN	IDA

ľ	$^{(4)}$	11.12.84	(5) 11.4.85%	SIG :	SIGNE LIC	LS .		SCIKNIDA
		4.10.84	Ga.	TI:	TEXAS I	U.ATZN	IMENT	
Ī	2	11.5.84	Vo	MOT:	MOTORO	LA	LN: L	DW NOISE
	1	9.2.84	4a	FC:	FAIRCHI	LD		
Ī	$\overline{\circ}$	21.6.82	TAMAS %	NS :	MOITAM	77 SE	MICONDUCTO	DRS
Γ	S	TUDER	HL ST !NPUT	UNIT .	ICH/FILTER	PL 1.	912.240.00	PAGE 5 OF 13

IND	POS NO	-	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
L					
5	Q. 01	<u>50.03.0216</u>	J 111		Sx
L	. 02	50.03.0350	J 112		١.
L	. 03				•
L	.04	50.03.0350	J 112		6 ,
L	.05	50.03.0350	J 412		•
	,06	50.03.0350	J 112		
1	.07	50.03.0350	J 112	*	٧
1	80.	50.03.0350	J 112	. *	1
1	90.	50.03.0350	J 442	*	h
1	.10	50.03.0350	J 412	*	1)
-	.11	50.03.0350	J 412		`
Г	.12	5 0.03.0350	J 412		11
	.13	50.03.0350			
	Q 301	50.03.0350	J 112		Sx
	302	50.03.0350			Sx
Г	363	50.03.0515		PNP BC 557	
Г	304	50.03.0350] 412		Sx
Г	305	50.03.0436	BC 237	NPN BC 547	1
					1
Г					
Г					1
					1
					1
					†
					1
H					1

IND	DATE	NAM	ME						
4	11.12.84	5) M.4. &	8549	Sx:	SILICON	X			
3	4.10.84		94						
2	11.5.84		1/-						
0	9.2.84		90				* a	aly	8CH
0	24.6.82	TAMAS	5 fa					•	
S	TUDER	HL ST	INFUT	UNIT 40	HFILTER	PL.	1.912.240.00	PAGE	6 of 13

IND	POS NO		RT NO	VALU	E	SPECIFICATIONS/EQUIVALENT	MFR
	R.01	57.	11.3152	4,5	V	1%	
	.02	1	.3392	3,9	k	1%	
	εο.		.3152	4,5	k	1%	
	۲٥.		.3392	3,9	k	1%	
	.05		.3152	4,5	K	1%	
	.06		.3392	3'6	k	1%	
	.07		.3152	4,5	V	1%	
	.08		.3392	2,9	k	1%	
	.09		.4152	1,5	k	2%	
	.10		.3752	7.5	k	2%	
	.11		.4181	180	$\boldsymbol{\sigma}$	2%	
	.12		.3752	7,5	k	2%	
	.43		. 4271	270	σ		
	.14	58.0	01.8102	1	k	TRIM	
	.15	57./		2,7	k		
	.16		14.4152	1,5	k		
	.17		.001.38	10	k	2 × 10k LIN POT	ST
	.18	57.	11.4152	4,5	k		
	.19	1	1.4222	2,2	k		
	.20		.3362	3,6	k	2%	
	.21 .22		. 3162	1,6	Ŋ.	2%	
5	.22		.5106	40	M		
	.23		.4222	2,2	İκ		
	.24		.4472	4,7	k		
	.25		.3113	14	Ŋ,	2%	
5	.26		.5106	10	Μ		
	-27		. 4223	22	k		
1	.28		.4330	33	Ω	OPTION 1 replaced by lin	h
	.29		.4453	15	k	:	
	.30		.4223	22	k		

IND	DATE	NAME .					
(4)	11.12.84	5 114 85/4	ST:	STUDER			
3	4. 10.84	\$'G					
2	11.5.84	Vo-	OPTION	1 with	Fil	ter	
0	9.2.84	ga					
0	21.6.82	TAMAS %					
9	TUDER	HLST INPUT	T LINIT 40	H/FILTER	PL	1.912.240.00	PAGE 7 OF 13

IND	POS NO	PAR	IT NO	VALUI	E	SPECIFICATIONS/EQUIVALENT	MFR
	R.31		1.4682	6,8	k		
	432	1.912.	001.35	10	k	POS.LOG. POT	ST
	232			10	k	NEG. LOG. J	i
	.33	57.1	1.3132	1,3	k		
	.34		.4332	3,3	k		
	.35		.4472	4,7	k		
	.36		.4333	33	k		
	.37		.4472	4,7	k		
	.38		.4472	4,7	k		
	.39		.4332	3,3	k		
	.40		.4333	33	k		
	.41		.4332	3,3	k		
	.42		.4332	3,3	k		
	.43		.4333	33	k		
	,44	1.912.	001.44	10	k	2 x 10k POS. LOG. FOT	ST
	.45	57.1	1.4332	3,3	k		
	.46	1	.4333	33	k		
	.47		.4332	3,3	k		
	148		. 4104	100	k		
5	.49		.5106	10	M		
5	,50		.5106	10	M		
	.51		.4333	33	k		
	.52		.4332	3,3	k		
	153		.4104	100	k		
5	.54		.5106	10	Μ		
5	.55		.5106	10	M		
1	.56		.4333	33	k	*	
1	.57		.4332	3,3	k	*	
1	458		.4104	100	k	*	
5	.59		.5106	10	M	*	

טאון	DATE	NAME ,					
4	11.12.84	3 11.4 85 /s	ST:	STUDER	`		
3	4.10 84	40					
2	14.5.84	10.					
①	9.2.84	40				* or	aly 8 CH
0	22.6.82	TAMAS %					•
US.	TUDER	HL ST INPLIT	UNIT L	ICH/FILTER	PL	1.912.240.00	PAGE 8 OF 13

IND	POS NO	L	PART	NO	VALUI		SPECIFICATIONS/EQUIVALENT	MFR
5	R.60	57	.11	.5106	. 10	M	*	
1	.61		1	.4333	33	k	*	
1	.62			.4332	3,3	k	*	
1	163			.4104		k	*	
5	.64			.5106	10	M	*	
1 5 5 5	.65			.5106	10	\mathbb{M}	*	
5	.66			.5106		M		
	.67			.4103	10	k		
	.68			.4333	33	k		
5	.69			.5106	10	M		
	.69 .70		\perp	.4103	10	k		
L	.71			.4333	33	k		
1	.72			.4182	1,8	k	1.912.241/243.00 replaced by link	
							•	
	R301	57	11	.4472	4,7	k		
	302	1	1	.4472	4,7	k		
	303			.4154	150	k		
	304		十	.4154	150	k		
4	355			.3511	510	\vec{v}		
5	356			.5106				
	307			.4103	10	k		
5	30E		1.	.5106	10	M		
	309		T	.4104	100	k		
	310			.4104	100	k		
	311	57		.0209	5,6	Ω	PTC	***************************************
	312	57		. 0209	5,6	Ω	PTC	
	313	57		.0206	50	Ω	PTC	
IND	DAT		N	AME _				
	41.12.	84	5)11.	4.85%				
3	4.10.			94				
2	11.5.	84		U				
0	9.2.	84		40			* only 80	1
0	22.6	82	1/1/1	4S 45				
S	TUD	ER I	tL S	TUPUT	UNIT 40	2H/	FILTER PL 1.912.240.00 PAGE 9	of 13

0.0	=7.00	5,0 32	070	
	57.99.0206	20 V	PTC	
IND DATE	NAME .			
4 11.12. 84				
3 4.10.84	94			
2 11.5.84	U			
0 9.2.84	16 4c		* only	8CH
0 22.6.82			1	
		LANT HAU	FILTER PL 1.912.240.00 PAGE	0 40
STUDER	8 lur 21 turan	UNIT TON	TILLER PL 1.312.290.00 PAG	SE -2 OF 12
IND POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
\$101	55.15.0002	2 _P	7 -1.912.240.05	ST
	55.15.0002	2 _P	MUTUAL RELEASING	
301	55.15.0002	2p	1_3	
100				
+				
\dashv				_
1 100	EE 45 000		PUSHBUTTON *	
	55.15.0002	2p		_
	55.03.0303		KNOB GREY/RED *	
	55.15.0002	2р	PUSHBUTTON	
	55.03.0303		KNOB GREY/RED	
	55.45.0002	_2p	PUSHBUTTON	
	55.03.0303		KNOB GREY/RED	
1 105	55.15.0002	2٥	PUSHBUTTON *	
1	55.03.0303		KMOB GREY/RED *	
202				
203				
				
204				
1201				
205				
1200				_
-				
_				
IND DATE	NAME .			
4 11.12.8L		ST : S	TUIDER	
3 4.10.84	1 44			

IND DATE	NAME ,						
4 11.12, 84	5 114.85 /G	ST:	STUIDER				
3 4.10.84	44						
2 M.5.84	Vo						
1 9.2.84	40					* 0	nly 8CH
0 23.6.82	TAMAS A						
STUDER	HL ST IMPUT	T UNIT	4CH/FILTER	PL	1.912	.240.00	page11 of13

ND	POS NO		PART NO	VALUE		SPECIFICATIONS/EQUIVALENT	MF
	R314	57	.99.0209	5,6	IJ	PTC	
5	315	57	.11.5106	10	M		
	316		1.4104	100	k		
	317		.4104	100	k		
	318		.4105	1	M		
	319		.4104	100	k		
	320		.4104	100	k		
	324		.4105	1	M		
	322		.4473	47	k		
	323		.4331	330	\overline{U}		
	324		.4271	270	$\mathcal{C}_{\mathbf{I}}$		
	325		.4104	100	k		
	326		.4331	330	Ω		
	327		.4103	10	k		
5	328		.5335	3,3	Μ		
	320		.4183	18	k		
	330		.4681	680	Ω		
	331		.4102	4	k		
	332		.4471	470	U		
T	333	1.91	2.001.42	10	k	POS. LOG. FOT	ST
T	334		.11.4332	3,3	k		
	335	1.91	2.001.42	10	k	POS. LOG. POT	ST
1	336		.11.4332	3,3	k		
	337		2.001.42	10	k	POS. LOG. POT	ST
1	338		.11.4332	3,3	k		
T	330		.11.4104	<00°	k		
1	340	57	.11.4104	100	k		
+					-		-
+	-+				\dashv		

IND	DATE	NAME ,	L					
4	11.12. 84	3 11.4.85 /	ST	:	STUDE	R		
3	4.10.84	44						
2	11.5.84	1						
1	9.4.84	fa.						
0	22.6.82	TAMAS 40						
S	TUDER	HL ST INPUT	UNIT	4CH	/FILTER	PL	1.912.240.00	page 10 of 13

IND	POS NO		VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	S302	55.15.0002	2р	PUSHBUTTON	
		55.03.0303		KNOB GREY/RED	
1	303	} 55.15.0003	2 _P	} PUSHBUTTON)	
1	304	J		DPTION 1	
1		55.03.0303		KNOB GREY/RED)	
	305			PLISHBUTTON	
		55.15.0116		BEZEL BLACH	
		55.15.0122		KNOB RED	
	306			PUSHEUTTON	
		55.15.0116		BEZEL BLACH	
		55.15.0129		KNOB WHITE	
	307				
	308				
	369				
	310	<u>} 55.15:0004</u>	Чp	PUSHBUTTON A'L	
		55.03.0303		KNOB GREY/RED	
	311			COMBINED WITH R 333	
	312			" " R 335	
	313			1 R337	
	314			* * R.44	
	T.01	1.022.419.00		1:1	ST
		1.022.400.03		INSULATION	ST

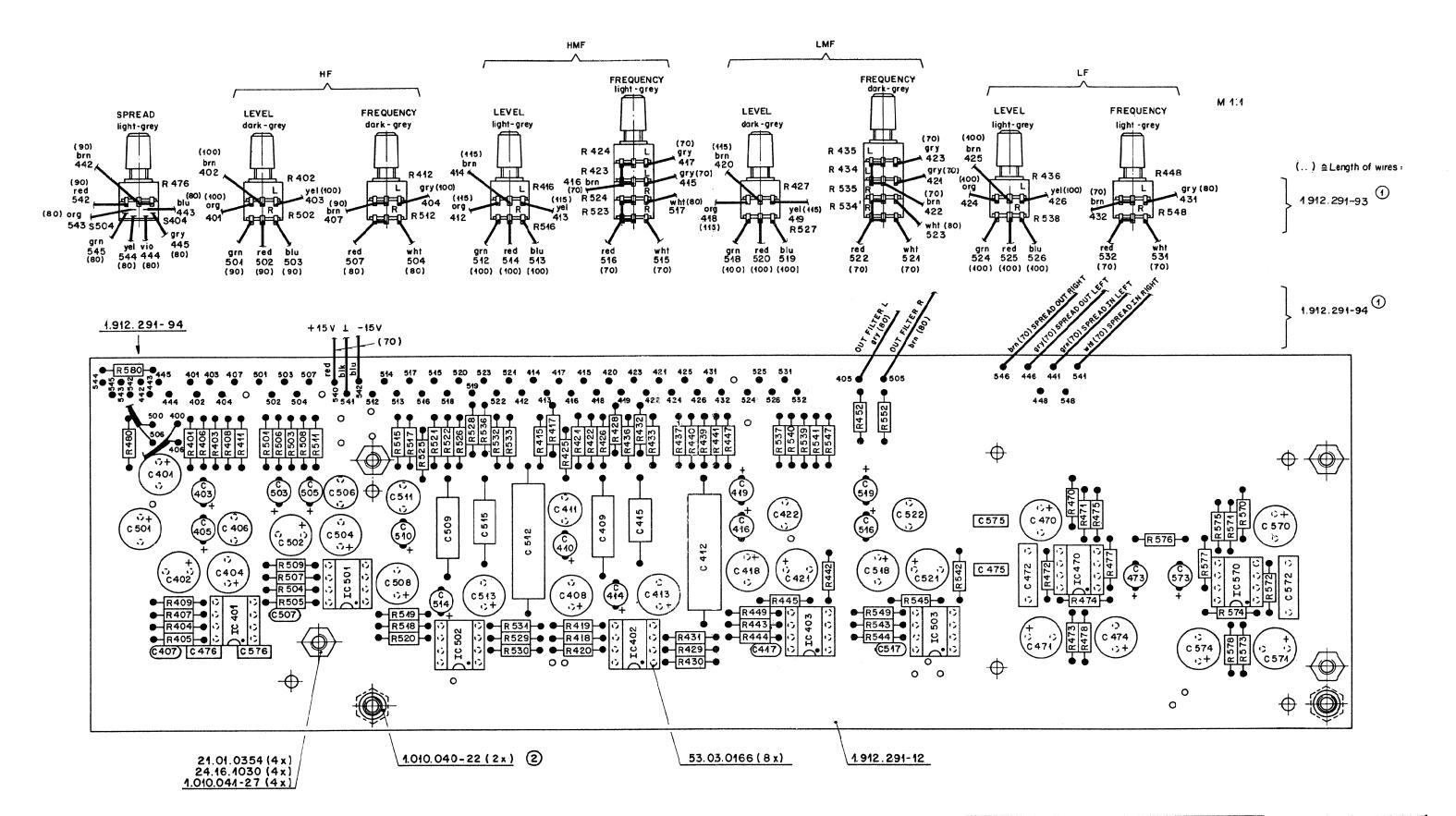
IND	DATE	NAME .	
4	11.12.84	311.4.85%	ST : STUDER
3	4.10.84	40	
2	11.5.84	V.	OPTION 1 with Filter
1	9.2.84	/a	
\bigcirc	22.6.82	TAMAS %	
9	TUDER	HL ST IMPLO	T UNIT 4CH/FILTER PL 1.912.240.00 PAGE 12 OF 13

IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
<u>_</u>					
<u> </u>	XIC	<u>53.03.0166</u>	9 p	IC - SOCKET	
L		53.03.0167	14 _P	•	
		53.03.0168	16p		
<u> </u>					
1	W 1			OPTION 1: replaced R 172	
1	2	-		OPTION1: replaced R272	
1	3			1.912.241/243.00: replaced R128	
1	4			1.912.241/243.00: replaced R228	
1	5			only 4CH only PCB 1.912.240-11 INDEX O *	
1	6			only PCB 1.912.240-11 INDEX O *	
1	7			*	
Λ	8			only 4CH	
1	9			*	
1	10			only 4CH	
1	11			only 1.912.241,/243.00	
1	12			only 1.912.241/243.00	

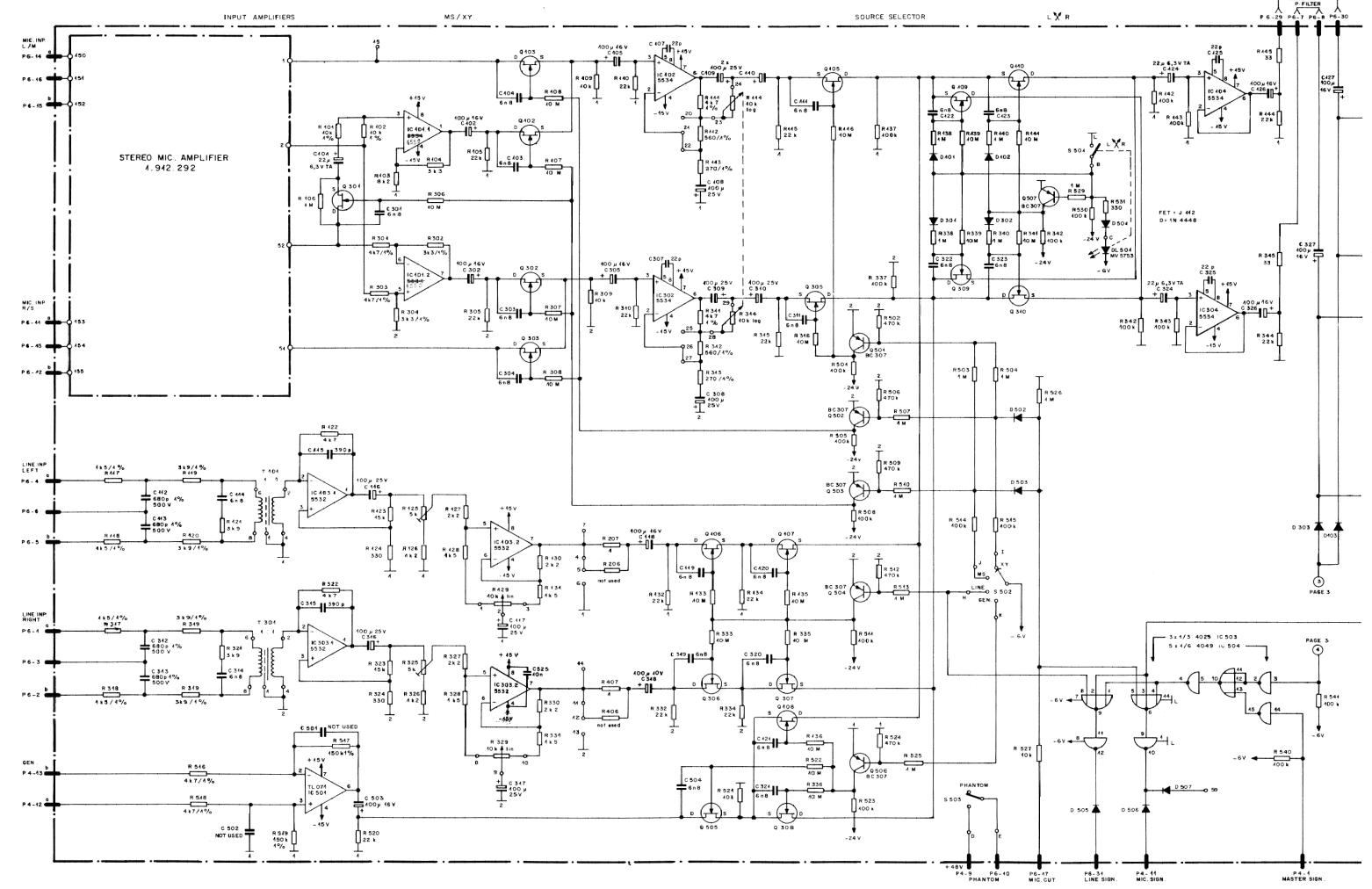
\neg					
1					
\neg					
ND	DATE	i NAME . I			
	11. 12.		****		

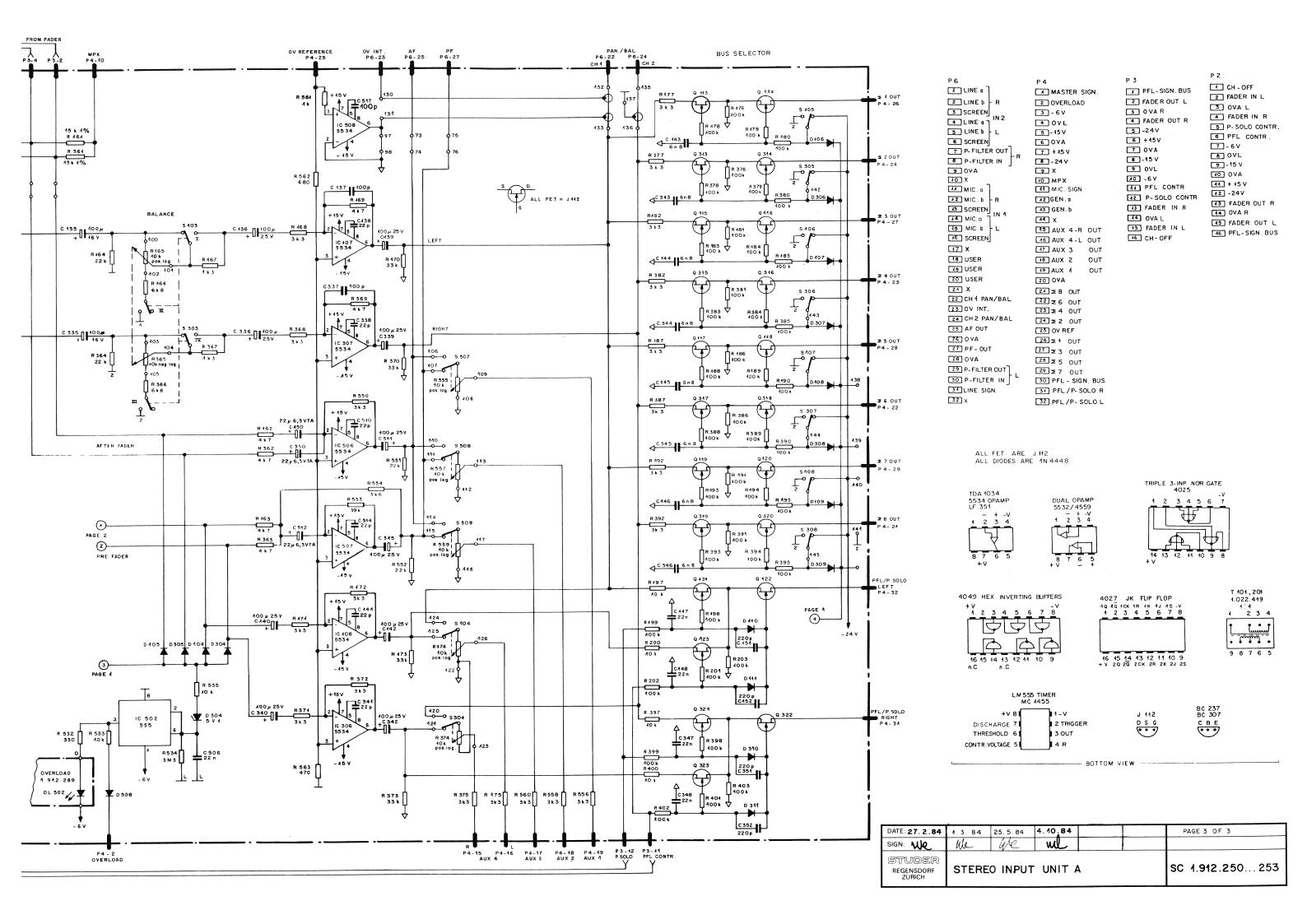
* only 8CH

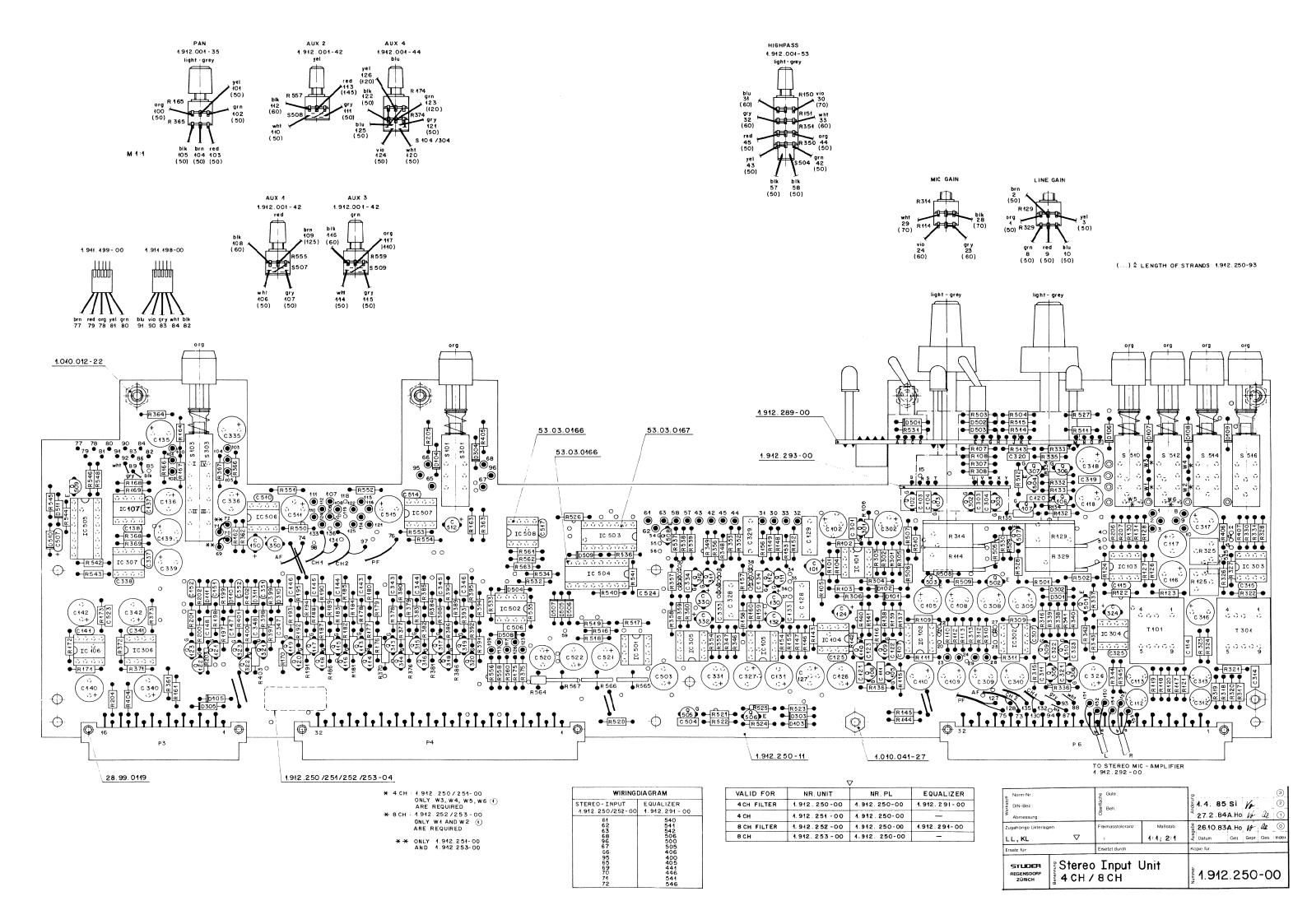
STUDER HLST INPUT LINE YCH/FILTER PL 1.912.240.00 PAGE 13 OF 13

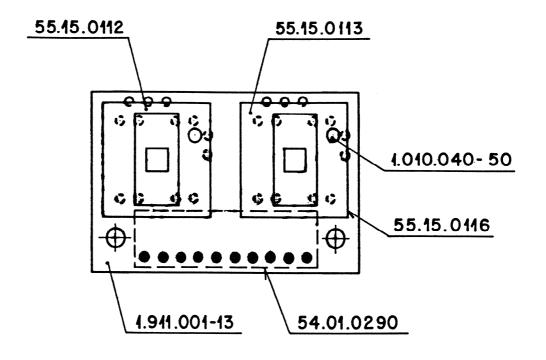


¥	Norm-Nr.:		Operflacte Güte: Beh.:						-		(3)
Werkstoff	DIN-Bez.:					12.9.	35	A.Ho	ml	wh	2
š	Abmessung:					22.5.	34	STJ	Vo	Vo	①
Zu	gehörige Unterlage	en:	Freimasstoleranz: Maßstab:			8.9.8	3	A.Ho	W	ae	0
Ρl	-			1:1; 2:1	Ausg	Datum		Gez.	Gepr.	Ges.	Index
Ers	satz für:		Ersetzt durch:			pie für:					
	STUDER REGENSDORF ZÜRICH	Equaliz Equaliz	er Boar	d	Nummer:	1.91	2	.29) 1-	00)

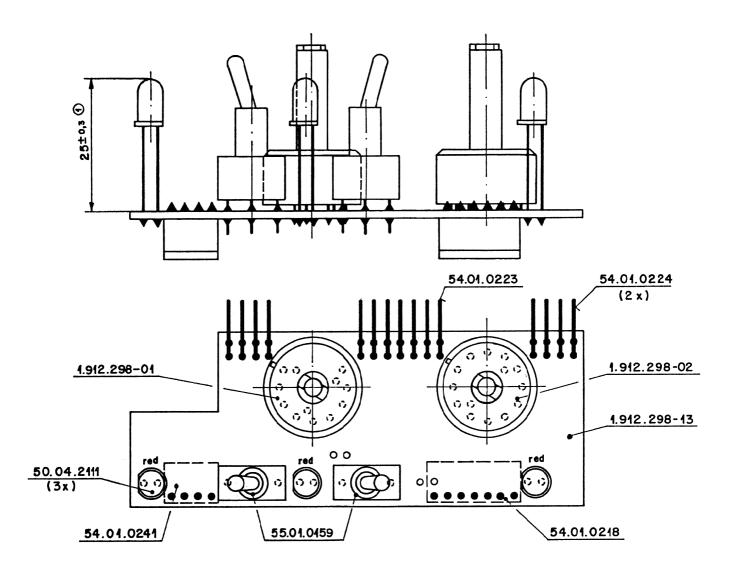




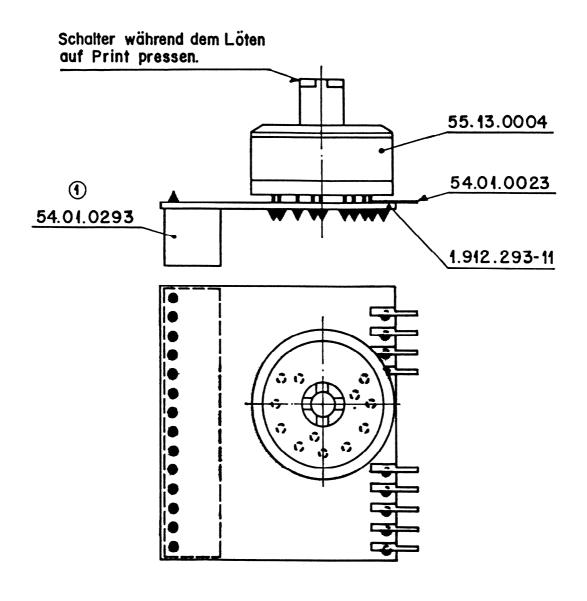




	STUDER REGENSDORF ZÜRICH			etton Board N-1			1.911.003 - 00				
Er	Zugehörige Unterlagen:			± 2:1			Datum pie für:	Gez.	Gepr.	Ges.	Index
Zu						age	19.5.82	Но	W		0
`	Abmessung:		å		*						1
Werkstoff	DIN-Bez.:		erfia	Beh.:							2
#	Norm-Nr.:			Güte:		2					3



=	Norm-Nr.;		ž	Güte:		١,					3
Į,	DIN-Bez.:		Ţ	Beh.:							②
É	Abmessung: .gehörige Unterlagen:			8							0
Zu				Freimasstotersna: Maßstab:		agge	25.11.83 A.Ho		16 ac		0
				+ 2:1			Datum	Gez.	Gopr	Ges.	Index
En	meta für:		En	Ersetzt durch:			pie fur:				
	STUDER REGENSOORF ZÜRICH	Switch	h - l	Board S	Stereo	Nummer:	1.912.	28	39-	00	0



Ē	Norm-Nr.:		۽	Güte:							3
Werkstoff	DIN-Bez.:		arfile o	Beh.:							2
š	Abmessung:		ð				13.1. 84	A.Ho	16	i	0
Zu	Lugehörige Unterlagen:			Freimasstoleranz: Maßstab:			6. 5.83	A.Ho	Vr	Qe	0
							Datum	Gez.	Gepr.	Ges.	Index
Er	satz für:		Ersetzt durch:			Ko	pie für:				
STUDER REGENSPORF ZÜRICH SWITCH			١	Interfo	ıce	Nummer:	1.912	2. 2	93	-0	0

IND.	POS.NO.	PART NÜ.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	A • • • • 1	1.912.292.00		STEREO-MIC-AMPLIFIER	
	A • • • • 2	1.912.293.00		SWITCH-INTERFACE	
	A • • • • 3	1.912.289.00		SWITCH-BOARD-STERED	
	A • • • • 4	1.911.003.00		PUSHBUTTON BOARD N-L	
	A 5	1.911.199.00		CONNECTING CABLE 1	
	A • • • • 6	1.911.198.00		CONNECTING CABLE 2	
	A • • • • 7			EQUALIZER-BOARD 1.912.291.00	option 2
	6 101	50 30 2222	22	20% / 2W TA	
	C • • • 101	59.30.2220	22 uF	-20% 6.3V TA	

A • • • • 7				EQUALI	ZER-BO	ARD	1.912.291.00
C • • • 101	59.30.2220	22	uЕ	-20%	6.3V	ΤA	
C • • • 102	59.22.4101	100	uҒ	-10%	167	ΕL	
C103	59.06.0682	6 • 8	nF	10%	50V		
C • • • 104	59.06.0682	6.8	nF	10%	50V	PΕ	
C • • • 105	59.22.4101	100	uЕ	-20%	16V	ΕL	
C • • • 106		not u	sed				
C • • • 107	59.34.2220	22	pF	5%		ÇE	
C • • • 108	59.22.4101	100	uЕ	-20%	16V	EL	
C • • • 109	59.22.4101	100	uF	-20%	16V	EL	
C • • • 110	59.22.4101	100	uҒ	-20%	167	EL	
C • • • 111	59.06.0682	6.3	nF	10%	50V	ΕL	
C • • • 112	59.05.1681	680	ρF	1%	500V	PP	
C•••113	59.05.1681	680	pF	1%	500V	PP	
C • • • 114	59.06.0682	6.8	nF	10%	50V	PΕ	
C • • • 115	59.34.5391	390	Þ۴	5%		CΕ	
C • • • 116	59.22.4101	100	uЕ	-20%	16V	EL	
C • • • 117	59.22.4101	100	uF	-20%	16V	EL	
C118	59.22.4101	100	uЕ	-20%	16V	EL	
C • • • 119	59.06.0682	6.8	nF	10%	50V	PΕ	
C • • • 120	59.06.0682	6.8	nF	10%	50 V	ΡĒ	
C • • • 121	59.06.0682					PΕ	
C • • • 122	59.06.0682	6.8	nF	10%	5 O V	PΕ	
C • • • 123	59.06.0682	6.8	nF	10%	50V	PΕ	
C • • • 124	59.30.2220	22	uF	-20%	6.3V	TΑ	
C • • • 125	59.34.2220	22	ρF	5%		CE	
C • • • 126	59.22.4101	100	uF	-20%	16V	ΕL	
C • • • 127	59.22.4101	100	иF	-20%	16V	EL	
C • • • 128	59.02.2124	120	nF	5%		PΩ	
C•••129	59.02.2124	120	nΕ	5%		PС	
	C101 C102 C103 C104 C105 C106 C107 C108 C110 C111 C112 C113 C114 C115 C116 C117 C118 C119 C120 C121 C123 C124 C125 C125 C125 C126 C127	C101	C101	C101 59.30.2220 22 uF C102 59.22.4101 100 uF C103 59.06.0682 6.8 nF C105 59.22.4101 100 uF C106 not used C107 59.34.2220 22 pF C108 59.22.4101 100 uF C109 59.22.4101 100 uF C110 59.22.4101 100 uF C111 59.06.0682 6.8 nF C112 59.05.1681 680 pF C113 59.05.1681 680 pF C114 59.06.0682 6.8 nF C115 59.34.5391 390 pF C116 59.22.4101 100 uF C117 59.22.4101 100 uF C118 59.22.4101 100 uF C119 59.06.0682 6.8 nF C120 59.06.0682 6.8 nF C121 59.06.0682 6.8 nF C122 59.06.0682 6.8 nF C123 59.06.0682 6.8 nF C124 59.30.2220 22 pF C125 59.34.2220 22 pF C126 59.34.2220 22 pF C127 59.22.4101 100 uF C127 59.22.4101 100 uF C128 59.30.2220 22 pF C124 59.30.2220 22 pF C125 59.34.2220 22 pF C126 59.22.4101 100 uF C127 59.22.4101 100 uF	C101	C101	C101

(01)	C • • • 129	59.02.2124	120 nF	5%	PC			
S T U	D E R (04)	84/10/04 TA	STEREO-INPL	IT-4CH/8CH		1.912.250.00	PAGE	1

IND.	POS.NO.	PART NO.	VALUE	SPECI	FICATIO	NS / EQU	IVALENT	MA	NUF.
	C130	59.30.2220	22 uE	-20%	6.3V	Τ.Δ			
	C • • • 131	59.22.4101	100 uE	-20%	164	FI			
	C • • • 132	59.22.4101 59.30.2220 59.06.0222	22 uE	-20%	6.3V	TΛ			
	C • • • 133	59.06.0222	2.2 nF	10%	50V	DE			
	C • • • 134	59.06.0682	6.8 nF	10%	50V	D C			
	C135	59.22.4131	100 uF	-20%	164	FI			
	C • • • 136	59.22.4101	100 uF	= 20%	164	FI			
	C • • • 137	59.06.0682 59.22.4101 59.22.4101 59.34.4101	100 uF	-20% 5%	104	CE			
	C • • • 138	59.34.2220	22 nF	5%		CE			
	C • • • 139	59.34.2220 59.22.4101 59.22.4101 59.34.2220	100 uF	-20%	167	FI			
	C • • • 140	59.22.4101	100 uF	-20%	167	FI			
	C • • • 141	59.34.2220	22 pF	5%	101	CE			
	C • • • 142	59.22.4101	100 uF	-20%	16V	FI			
	C • • • 143	59.06.0682	6.8 nF	10%	50V	PE			
	C • • • 144	59.06.0682 59.06.0682 59.06.0682 59.06.0682	6.8 nF	10%	50V	PE			
	C 145	59.06.0682	≄ 648 nF	10%	50V	PE			
	C 140	59.06.0682	* 6.8 nF	10%	50 V	PE			
	C147	59.06.0223	22 nF	10%	50V	PĒ			
	C148	59.06.0682 59.06.0223 59.06.0223	22 nF	10% 10% 10%	50V	PE			
	C • • • 149		not used						
	C • • • 150	59.30.2220 59.34.4221 59.34.4221 59.06.0682 59.22.4101 59.06.0682	22 uF	-20%	6.3V	TA			
	C151	59.34.4221	220 pF	5%		CE			
	C • • • 152	59.34.4221	220 pF	5%		CE			
	C301	59.06.0682	6.8 nF	10%	50V	PE			
	C302	59.22.4101	100 uF	-1ú%	16V	EL			
	C • • • 3 0 3	59.06.0682	6.8 nF	10%	50 V	PE			
	C • • • 304	59.06.0682	6.8 nF	10%	50V	PE			
	C • • • 305	59.06.0682 59.22.4101	100 uF	-20%	16V	EL			
	C • • • 306	59.34.2220	not used						
	C • • • 307	59.34.2220	22 pF	5%		CE			
	C • • • 308	59.22.4101	100 uF	-20%	16V	EL			
	C • • • 309	59.22.4101	100 uF	-20%	16V	EL			
	C • • • 310	59.22.4101	100 uF	-20%	16V	EL			
	C • • • 311	59.06.0682	100 uF 100 uF 6∙8 nF	-20% -20% 10%	50V	EL			
	C • • • 312	59.05.1681	680 pF	1%	500V	PP			
	C•••313	59.05.1681	680 pF	1%	500V	PP			
(01)	C • • • 314	59.22.4101 59.06.0682 59.05.1681 59.05.1681 59.06.0682	6.8 nF	10%	50V	PE			
5 T U	D E R (04) 84/10/04 TA	STEREO-I	NPUT-4CI	H/8CH		1.912.250.00	PAGE	2

IND.	POS.NO.	PART NO.	VALUE	SPECI	FICATIO	NS / EQ	UIVALENT 	MAN 	MANUF.		
(01)	C•••315	59.34.5391	390 pF	5%		CE					
	C • • • 316	59.22.4101	100 uF	-20%	167	EL					
	C317	59.22.4101	100 uF	-20%	167	EL					
(03)	C318	59.22.3101	100 uF	−2ü%	100	EL					
• • •	C319	59.06.0682	6.8 nF	10%	50V	PE					
	C • • • 320	59.06.0682	6.8 nF	10%	50V	PE					
	C • • • 321	59.06.0682	6.8 nF	10%	50V	PE					
	C • • • 322	59.06.0682	6•8 nF	10%	50V	PE					
	C • • • 323	59.06.0682	6.8 nF	10%	50 V	PE					
	C • • • 324	59.30.2220	22 uF	-20%	6.3V	TA					
	C 325	59.34.2220	22 pF	5%		CE					
	C 326	59.22.4101	100 uF	-20%	164	EL					
	C • • • 327	59.22.4101	100 uF	-20%	167	EL					
(01)	C • • • 328	59.02.2124	120 nF	5%		PC					
(01)	C329	59.02.2124	120 nF	5%		PC					
	C • • • 330	59.30.2220	22 uF	-20%	6.3V	TA					
	C • • • 331	59.22.4101	100 uF	-20%	167	EL					
	C • • • 332	59.30.2220	22 uF	-20%	6.3V	TA					
	C • • • 333	59.06.0222	2•2 nF	10%	50V	PE					
	C • • • 334	59.06.0682	6.8 nF	10%	50V	PĒ					
	C • • • 335	59.22.4101	100 uF	-20%	16V	EL					
	C • • • 336	59.22.4101	100 uF	- 2∪%	16V	EL					
	C • • • 337	59.34.4101	100 pF	5%		CE					
	C • • • 338	59.34.2220	22 pF	5%		CE					
	C • • • 339	59.22.4101		-20%	167	EL					
	C • • • 340	59.22.4101	100 uF	-20%	16V	EL					
	C • • • 341	59.34.2220	22 pF	5%		CE					
	C • • • 342	59.22.4101	100 uF	-20%	167	EL					
	C • • • 343	59.06.0682	6.8 nF	10%	50 v	PE					
	C 344	59.06.0682	6.8 nF	10%	50V	PE					
	C • • • 345	59.06.0682	* 6.8 nF	10%	50 V	PE					
	C 346	59.06.0682	★ 6.8 nF	10%	50V	ΡĒ					
		59.06.0223	22 nF	10%	5 O V	ΡE					
	C 348	59.06.0223	22 nF	10%	50 V	PE					
	C • • • 349		not used								
		59.30.2220	22 uF	-20%	6.3V	TA					
	C • • • 351	59.34.4221	220 pF	5%		CE					

IND.	POS.NO.	PART NO.	VALUE	SPECI	FICATIO	INS / EQI	SPECIFICATIONS / EQUIVALENT			JF.
	C • • • 352	59.34.4221	220 pF	5%		CE				
	C • • • 501		not used							
	C • • • 502		not used			- .				
	C503	59.22.4101	100 uF	-20%	167	EL				
	C • • • 504	59.06.0682	6.8 nF	10%	50V	PΕ				
	C • • • 505		not used			0.5				
	C • • • 506	59.06.0223	22 nF	10%	50V	PE				
(03)	C507	59.26.9109	1 uF		25 V	SAL				
	C • • • 508		not used							
	C • • • 509		not used							
	C510	59.34.2220	22 pF	5%		CE				
	C • • • 511	59.22.4101	100 uF		160					
	C • • • 512	59.30.2220	22 uF	-20%	6.3V	TA				
	C513		not used							
	C•••514	59.34.2220	22 pF	5%		CE				
	C•••515	59.22.4101	100 uF	-10%	16V	EL				
	C•••516		not used							
(04)	C•••517	59.34.4101	100 pF	5%		CE				
	C•••518		not used							
	C • • • 519		not used							
	C•••520	59.22.5101	100 uF	-10%	25V	EL				
	C•••521	59.22.4101	100 uF	-10%	161	EL				
	C • • • 522	59.22.4101	100 uF	-10%	16V	٤L				
	C•••523	59.06.0104	100 nF		50V	PΕ				
	C • • • 524	59.06.0104	100 nF		50 V	ΡĒ				
(31)	C • • • 525	59.32.3103	10 nF			CE				
	0101	50.04.0125	1N4448						ar	ıγ
	D102	50.04.0125	1N4448						ar	jλ
	D•••103	50.04.0125	1N4448						ar	١y
	D104	50.04.0125	1N4448						an	١y
	0105	50.04.0125	1N4448						ar	١y
(03)	D106	50.04.0125	* 1N4448						ar	١ÿ
	D107	50.04.0125	1N4448						ar	١y
(03)	D108	50.04.0125	1N4448						ar	١y
•	D109	50.04.0125	↑ 1N4448						ar	•
	D110	50.04.0125	1N4448						an	١y
STU	D E R (04) 84/10/04 TA	STEREO-I	NPUT-4C	H/8CH		1.912.25	0.00	PAGE	4

IND.	P05.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUI	VALENT MANUF.
	0111	50.04.0125	1N4448		any
	D301	50.04.0125	1N4448		aný
	D302	50.04.0125	1N4448		an y
	0303	50.04.0125	1N444B		an y
	D304	50.04.0125	1N4448		any
	D•••305	50.04.0125	1N4448		any
	D306		1N4448		50040125 any
	D307		1N4448		50040125 any
	D308		* 1N4448		50040125 any
	D • • • 309		* 1N4448		50040125 any
	D310	50.04.0125	1N4448		any
	D•••311	50.04.0125	1N4448		any
	D•••501	50.04.0125	1N4448		any
	D • • • 502	50.04.0125	1N4448		any
	D•••503	50.04.0125	1N4448		any
	D • • • 504	50.04.1112	Z 5.1V	40JmW BZX83C 5	•1, BZX55C 5.1, ZPD 5.1
	D505	50.04.0125	1N4448		any
	D • • • 506	50.04.0125	1N4448		any
	D•••507	50.04.0125	1N4448		any
	D508 D509	50.04.0125	1N4448		any
	D510	50.04.0125	1N4448		any
	0511	50.04.0125	1N4448		any
	0511	50.04.0125	1N4448		any
	IC101	50.09.0107	RC4559 N	dual op• amp•	Ti•Sig•Ra
	IC102	50.05.0244	NE5534AN		noise Ti,Sig,Ra
	IC103	50.09.0106	NE5532AN		noise Ti•Sig•Ra
	IC • • 104	50.05.0243	NE5534 N	single op. amp.	Ti•Sig•Ra
(02)	IC105	50.09.0107	RC4559 N	dual op. amp.	Ti,Sig,Ŗa
	IC105	50.05.0243	NE5534 N	single op• amp•	Ti•Sig•Ra
	IC107	50.05.0243	NE5534 N	single op. amp.	Ti,Sig,Ra
	IC • • 302	50.05.0244	NE5534AN	, ,	noise Ti,Sig,Ra
	IC • • 303	50.09.0106	NE5532AN		noise Ti•Sig•Ra
	IC • • 304	50.05.0243	NE5534 N	single op. amp.	Ti,Sig,Ra
(02)	IC • • 305	50.09.0107	RC4559 N	dual op• amp•	Ti,Sig,Ra
	IC • • 306	50.05.0243	NE5534 N	single op• amp•	Ti+Sig+Ra
	IC • • 307	50.05.0243	NE5534 N	single op. amp.	Ti,Sig,Ra
S T U	D E R (04) 84/10/04 TA	STEREO-I	NPUT-4CH/8CH	1.912.250.00 PAGE 5

INO.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVA	LENT MANUF.
	IC501	50.09.0103	TL 071	single op. amp.	TI
	IC502	50.05.0158	NE. 555	timer	Sig, Mot, NSC
	IC••503	50.07.0012	CD4025	3-input nor-gate CMOS	Mot.Fc.NSC
	IC504	50.07.0049	CD4049	hex. inverter CMOS	Fc, Mot
	IC505	50.07.0027	CD4027	dual JK-FF CMOS	Mot,Fc
	IC506	50.05.0243	NE5534N	single op. amp.	TI, Sig, Ra
	IC••507	50.05.0243	NE5534N	single op. amp.	TI,Sig,Ra
	IC508	50.05.0243	NE5534N	single op. amp.	TI,Sig,Ra
	P••••3	54.11.2007	2*8 pin	euroconnector	Bu
	P • • • • 4	54.01.0359	2*16pin	euroconnector	Bu
	P••••6	54.01.0359	2*16pin	euroconnector	Bu
	Q102	50.03.0350	J 112	N-JFET	NS, Mot, Six
	Q103	50.03.0350	J 112	N-JFET	NS, Mot, Six
	Q105	50.03.0350	J 112	N-JFET	NS, Mot, Six
	Q106	50.03.0350	J 112	N-JFET	NS, Mot, Six
	Q107	50.03.0350	J 112	N-JFET	NS, Mot, Six
	Q108	50.03.0350	J 112	N-JFET	NS, Mot, Six
	Q109	50.03.0350	J 112	N-JFET	NS, Mot, Six
	Q110	50.03.0350	J 112	N-JFET	NS,Mot,Six
	Q111	50.03.0350	J 112	N-JFET	NS,Mot,Six
	Q112	50.03.0350	J 112	N-JFET	NS + Mat + Six
	Q • • • 113	50.03.0350	J 112	N-JFET	NS, Mot, Six
	Q • • • 114	50.03.0350	J 112	N-JFET	N5, Mot, Six
	Q115	50.03.0350	J 112	N-JFET	NS, Mot, Six
	Q116	50.03.0350	J 112	N-JFET	NS, Mot, Six
	Q • • • 117	50.03.0350	* J 112	N-JFET	NS,Mot,Six
	Q118	50.03.0350	* J 112	N-JFET	NS,Mot,Six
	Q119	50.03.0350	* J 112	N-JFET	NS, Mot, Six
	4120	50.03.0350	→ J 112	N-JFET	NS,Mot,Six
	Q121	50.03.0350	J 112	N-JFET	NS,Mot,Six
	Q • • • 122	50.03.0350	J 112	N-JFET	NS,Mot,Six
	Q • • • 123	50.03.0350	J 112	N-JFET	NS,Mot,Six
	Q • • • 301	50.03.0350	J 112	N-JFET	NS,Mot,Six
	Q • • • 302	50.03.0350	J 112	N-JFET	NS,Mot,Six
	Q303	50.03.0350	J 112	N-JFET	NS,Mot,Six
STU	D E R (04) 84/10/04 TA	STEREO-I	NPUT-4CH/8CH 1.	912.250.00 PAGE 6

 POS.NO.	PART NO.	VALUE	25 EC 1	FICATIO	142		VALENI		MA	NUF
Q305	50.03.0350	J 112	N-JFE	т				NS	,Mot,	Six
Q306	50.03.0350	J 112	N-JFE						.Mot.	
0307	50.03.0350	J 112	N-JFE						, Mot,	
0308	50.03.0350	J 112	N-JFE						·Mot ·	
Q309	50.03.0350	J 112	N-JFE						.Mot.	
Q310	50.03.0350	J 112	N-JFE					NS	, Mot,	Six
0311	50.03.0350	J 112	N-JFE						·Mot ·	
Q312	50.03.0350	J 112	N-JFE					NS	, Mot,	Six
Q313	50.03.0350	J 112	N-JFE					NS	, Mot,	Six
0314	50.03.0350	J 112	N-JFE					NS	, Mot,	Six
Q315	50.03.0350	J 112	N-JFE	T				NS	, Mot.,	Six
Q316	50.03.0350	J 112	N-JFE	T [']				NS	, Mot,	Six
Q317	50.03.0350	* J 112	N-JFE	Т				NS	, Mot,	Six
Q • • • 318	50.03.0350	* J 112	N-JFE	T				NS	,Mot,	Six
0319	50.03.0350	* J 112	N-JFE	Т				NS	, Mot,	Six
Q320	50.03:0350	* J 112	N-JFE	T				NS	, Mot,	Six
Q321	50.03.0350	J 112	N-JFE	Т				NS	, Mot,	Six
0 322	50.03.0350	J 112	N-JFE	T				NS	, Mot,	Six
Q323	50.03.0350	J 112	N-JFE	T				NS	, Mot,	Six
Q501	50.03.0515	BC 307	PNP	1C>100	mA,	8>100				any
0 502	50.03.0515	BC 307	PNP	IC>100	mA,	B>100				any
Q503	50.03.0515	BC 307	PNP	IC>100	mA,	8>100				any
Q504	50.03.ú515	BC 307	PNP	IC>100	mA,	B>10J				any
Q505	50.03.0350	J 112	N-JFE	T				NS	, Mot,	Six
Q506	50.03.0515	BC 367	PNP	IC>100	rn A 🕶	B>100				any
Q507	50.03.0515	BC 307	PNP	IC>100	mA 🕶	B>100				any
Q508	50.03.0515	BC 307	PNP	IC>100	mA ,	B>100				any
Q509	50.03.0436	BC 237	ири	IC>100	m A 🕫	B>100				an y
R101	57.11.3103	10 kOhm	1%	U.25W	MF					
R•••102	57.11.3103	10 kOhm	1%	0.25W	MF					
R•••103	57.11.4822	8•2 kOhm	5%	0.25W	MF					
R104	57.11.4332	3.3 kOhm	5%	0.25W	MF					
R•••105	57.11.4223	22 kOhm	5%	0.25W	MF					
R•••106	57.11.4105	1 MOhm	5%	U.25W	MF					
R107	57.11.6106	10 MOhm	10%	0.25W	MF					
R108	57.11.6106	10 MOhm	10%	0.25W	MF					

IND.	POS.NO.	PART NO.	VALUE	SPECI	FICATIONS	S / EQUIV	/ALENT	MAN	NUF.
	R109	57.11.4103	10 kOhm	5%	0.25W A	MF			
	R•••110	57.11.4223	22 kOhm	5%	0.25W N	MF			
	R•••111	57.11.3472	4•7 kOhm	1%	0.25W N	MF			
	R•••112	57.11.4561	560 Ohm	2 %	0.25W M	MF			
	R•••113	57.11.3271	270 Ohm	1%	0.25W N	MF			
	R•••114	1.912.001.30	10 kOhm	5%	pos.log.	variable	resistor		St
	R115	57.11.4223	22 kOhm	5%	0.25H M	MF			
	R•••116	57.11.6106	10 MOhm	10%	0.25W M	MF			
	R•••117	57.11.3152	1∙5 kOhm	1%	0.25W N	MF			
	R118	57.11.3152	1.5 kOhm	1%	0.25W M	MF			
	R•••119	57.11.3392	3•9 kOhm	1%	0.25W M	MF			
	R•••120	57.11.3392	3•9 kOhm	1%	0.25W M	MF.			
(01)	R•••121	57.11.4392	3•9 kOhm	5 %	0.25W M	4F			
(01)	R•••122	57.11.4472	4•7 kOhm	5%	0.25W M	4F			
(01)	R•••123	57.11.4153	15 kOhm	5%	0.25W M	4F			
(01)	R•••124	57.11.4331	330 Ohm	5%	0.25W M	4F			
(01)	R•••125	58.01.8502	5 kOhm	10%	0 • 5 OW	trimming	resistor		
(01)	R•••126	57.11.4122	1.2 kOhm	5%	0.25W M	1F			
(01)	R127	57.11.4222	2•2 kOhm	5%	0.25W M	1F			
	K•••128	57.11.4152	1.5 kOhm	5%	Q • 25W M	1F			
	R•••129	1.912.001.29	10 kOhm	10%	lin∙	variable	resistor		St
	R•••130	57.11.4222	2•2 kOhm	5%	0.25W M	4F			
	R•••131	57.11.4152	1.5 kOhm	5%	0.25W M	1F			
	R•••132	57.11.4223	22 kOhm	5%	0.25W M	1F			
	R•••133	57.11.6106	10 MOhm	10%	0.25W M	4F			
(01)	R134	57.11.4223	22 kOhm	5%	0.25W M	1F			
	R•••135	57.11.6106	10 MOhm	10%	0.25W M	1F			
(03)	R•••136	57.11.6106	10 MOhm	10%	0.25W M	1F			
(01)	R137	57.11.4104	100 kOhm	5%	0.25W M	1F			
	R•••138	57.11.4105	1 MOhm	5%	0.25W M	1F			
	R•••139	57.11.6106	10 MOhm	10%	0.25W M	1F			
	R140	57.11.4105	1 MOhm	5%	0.25W M	1F			
	R•••141	57.11.6106	10 MOhm	10%	0.25W M	1F			
(01)	R•••142	57.11.4104	100 kOhm	5%	0.25W M	16			
(01)	R•••143	57.11.4104	100 kOhm	5%	0.25W M	1 <i>F</i>			
	R • • • 144	57.11.4223	22 kOhm	5%	0.25W M	1F			
	R•••145	57.11.4330	33 Ohm	5%	0.25W M	1F			
s T U	D E R (0	4) 84/10/04 TA	STEREO-IN	NPUT-4C	H/8CH		1.912.250.00	PAGE	8

IND.	PO\$.NO.	PART NO.	VALUE	SPECI	FICATIONS / EQUIVALEN	MANUF.
(21)	R146 R147 R148	57.11.3474	3.9 kOhm 6.8 kOhm 470 kOhm	1 % 1 %	0.25W MF 0.25W MF 0.25W MF	
(01)	K•••149 R•••150	57.11.3392 1.912.001.53	3•9 kOhm 47 kOhm	1% 5% 5%	0.25W MF neg.log.variable res	istor Ct
	R•••151	1.712.001.53	47 kÖhm	5 %	neg.log.variable res	
(01)	R • • • 152	57.11.3392	3.9 kOnm	1%	0.25W MF	iscory see Kibo st
(01)	R•••153			5%	0.25W MF	
	R • • • 154	57.11.4684	680 kOhm	5%	0.25W MF	
	R155	57.11.4684	680 kOhm	5%	0.25W MF	
	R156	57.11.3474	470 kOhm	1%	0.25W MF	
	R156 R157 R158	57.11.3474 57.11.3392 57.11.3682	3∙9 kOhm 6∙8 kOhm	1%	0.25W MF	
	R158	57.11.3682	6.8 kOhm	1%	0.25₩ MF	
	R • • • 159 R • • • 160 R • • • 161 R • • • 162	57.11.6106	10 MOhm	10%	0.25W MF	
	R•••160	57.11.6106	10 MOhm	10%	0.25W MF	
	R161	57.11.3153	la kiihm	1 %	0.25W MF	
	R•••162	57.11.4472	4•7 kOhm	5%	0.25W MF	
	R•••163	57.11.4472	4•7 kOhm	5%	0.25W MF	
	R•••164	57.11.4223 1.912.001.35 57.11.4682	22 kOhm	5%	0.25N MF	
	R•••165	1.912.001.35	10 k0hm	20% 5% 2%	pos•log•variable res	istor St
	R166	57.11.4682	6.8 kOhm	5%	0.25W MF	
	R•••167	57.11.3132	1•3 kOhm		0.25W MF	
	R•••168 R•••169 R•••170	57.11.4332 57.11.4472	3.3 kOhm	5%	0.25W MF	
	R•••169	57.11.4472	4•7 kOhm	5% 5%	0.25W MF	
	R170	57.11.4333	33 KUNM		0.25W MF	
	R • • • 171 R • • • 172 R • • • 173	57.11.4332 57.11.4332 57.11.4333	3•3 kOhm	5%	Q.25W MF	
	R•••172	57.11.4332	3.3 kOhm	5% 5%	0.25W MF	
	R • • • 173	57.11.4333	33 kOhm		0.25W MF	_
	R • • • 174	1.912.001.44	10 kOhm	20%	pos.log.variable res	istor
	R • • • 175	57.11.4332 57.11.4104	3•3 kOhm	5%	U - 25W MF	
	R176	57.11.4104	100 kuhm	5%	0.25W MF	
	R • • • 177	57.11.4332	3.3 KUNM	5%	0.25W MF	
	R • • • 170	57.11.4104	100 kOhm	5%	0.25W MF	
	R178 R179 R180	57.11.4104 57.11.4104	100 KODM	5%	0.25W MF 0.25W MF	
	R181	57.11.4104	100 KONIII	⊃ 4 5 %	0.25W MF	
	R182		3.3 kOhm			
	K • • • 102	21.011.04225	J.J KUIIII	26	U · Z JM MF	
S T U	DER (C	04) 84/10/04 TA	STEREO-IN	IPUT-4C	H/8CH 1.91	2.250.00 PAGE 9

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATION	IS / EQI	JIVALENT	MANUF.
	Ř•••183	57.11.4104	100 kOhm	5% 0•25W	MF		
	R•••184	57.11.4104	100 kOhm	5% 0•25W	MF		
	R185	57.11.4104	100 kOhm	5% 0.25W	MF		
	R•••186	57.11.4104	*100 kOhm	5% U•25W	MF		
	R187	57.11.4332	*3.3 kOhm	5% 0•25W	ME		
	R•••188	57.11.4104	*100 kOhm	5% 0•25W	ME		
	R•••189	57.11.4104	*100 kOhm		ME		
	R • • • 190	57.11.4104	*100 kOhm	5% 0•25W	MF		
	R•••191	57.11.4104	*100 k0hm		MF		
	R•••192	57.11.4332	*3.3 kOhm		MF		
	R193		*100 k0hm		MF		
	R194	57.11.4104		5% 0.25W	MF		
	R•••195	57.11.4104	*100 kOhm		MF		
	R196		not used				
	R•••197	57.11.4103	10 kOhm	5% J.25W	MF		
	R•••198	57.11.4104	100 kOhm		ME		
	R • • • 199	57.11.4104	100 kOhm		MF		
	R • • • 200	57.11.4103	10 kOhm		MF		
	R•••201	57.11.4104	100 kOhm		MF		
	R • • • 202	57.11.4104	100 kOhm	5% 0.25W	MF		
	R•••203	57.11.4104	100 kOhm 100 kOhm		MF		
	R • • • 204		33 Ohm	5% 0.25W	MF		
	R • • • 205		1.8 kOhm	5% 0.25W	MF	57114182	optional 2
(01)	R•••206		not used				•
(01)	R•••207	57.11.4109	i Ohm	5% 0.25W	MF		
	R•••301		4•7 kOhm	1% 0.25W	MF		
	R•••302	57.11.3332	3.3 kOhm 4.7 kOhm	1% 0.25W	MF		
	K • • • 303			1% 0.25W	ME		
	R•••304	57.11.3332	3.3 kOhm	1% 0.25W	MF		
	R • • • 305	57.11.4223	22 kOhm	5% 0.25W	ME		
	R•••306	57.11.6106	lú MOhm	10% 0.25W	MF		
	R•••307	57.11.6106	10 MOhm	10% 0.25W	MF		
	R • • • 3 0 8	57.11.6106	10 MOhm	10% 0.25W	MF		
	R•••309	57.11.4103	10 kOhm	5% 0.25W	MF		
	R•••310	57.11.4223 57.11.3472 57.11.4561	22 kOhm	5% 0.25W	MF		
	R311	57.11.3472	4•7 kOhm	1% U•25W	MF		
	R•••312	57.11.4561	560 Ohm	2% 0.25W	MF		
STU	D E R (04)) 84/10/04 TA	STEREO-II	NPUT-4CH/8CH		1.912.250	0.00 PAGE 10

NUF.	ALENT MAR	S / EQUIVA	FICATIONS	SPECI	VALUE		PART NO.	POS.NO.	IND.
			0.25W MF				57.11.3271	R•••313	
5 t	resistor, see R114			5%	k0hm			R•••314	
			0.25W MF	5%	kOhm		57.11.4223	R•••315	
			0.25W MF	10%	MOhm		57.11.6106	R•••316	
			0.25W MF	1%	k0hm		57.11.3152	R•••317	
			0.25W MF	1%	kOhm		57.11.3152	R•••318	
			0.25W MF	1%	k0hm		57.11.3392	R•••319	
			0.25W MF	1%	k0hm		57.11.3392	R•••320	46.3.5
			0.25W MF	5%	kOhm		57.11.4392	R•••321	(01)
			0.25W MF	5%	k0hm		57.11.4472	R•••322	(01)
			0.25W MF	5%	k0hm		57.11.4153	R•••323	(01)
				. 5%		330	57.11.4331	R•••324	(01)
	resistor	trimming		10%	kOhm		58.01.8502	R•••325	(01)
			0.25W MF	5%	k0hm		57.11.4122	R•••326	(01)
			0.25W MF	5 %	k0hm		57.11.4222	R•••327	(01)
	: D130		0.25W MF	5%	k0hm		57.11.4152	R328	
25	resistor, see R129			10%	k0hm		C7 11 (222	R•••329	
			0.25W MF	5%	kOhm		57.11.4222	R•••330	
			0.25W MF	5%	k0hm		57.11.4152	R331	
			0.25W MF	5%	k0hm		57.11.4223	R•••332	
			0.25W MF	10%	MOhm		57.11.6106	R • • • 333	
			0.25W MF	5%	k0hm		57.11.4223	R334	(01)
			0.25W MF	10%	MOhm		57.11.6106	R•••335	
			0.25W MF	10%	MOhm		57.11.6106	R•••336	(03)
			0.25W MF	5%	kOhm		57.11.4104	R•••337	(01)
			0.25W MF	5%	MOhm		57.11.4105	R•••338	
			0.25W MF	10%	MOhm		57.11.6106	R•••339	
			0.25W MF	5%	MOhm		57.11.4105	R340	
			0.25W MF	10%	MOhm		57.11.6106	R•••341	
			0.25W MF	5%	kOhm	-	57.11.4104	R•••342	(01)
			0.25W MF	5%	kOhm		57.11.4104	R • • • 343	(01)
			0.25W MF	5%	kOhm		57.11.4223	R • • • 344	
			0.25W MF	5%	Ohm	33	57.11.4330	R•••345	
			0.25W MF	1%	kOhm		57.11.3392	R • • • 346	
			0.25W MF	1%	kOhm		57.11.3682	R•••347	
			0.25W MF	1%	kOhm		57.11.3474	R • • • 348	
		MF	0.25W MF	1%	kOhm	3.9	57.11.3392	R•••349	(01)

S T U D E R (04) 84/10/04 TA STEREO-INPUT-4CH/8CH 1.912.250.00 PAGE 11

NUF .	1AM		ALENT	EQUIV	NS /	FICATIO	SPECI	VALUE		PART NO.	POS.NO.	IND.
St	R150	see	re'sistor,	iable	q•var	neq.lo	5%	kOhm	47		R•••350	
			resistor,					kOhm	47		R351	
					MF	0.25W	1%	kOhm	3.9	57.11.3392	R•••352	(01)
					MF	0.25W	5%	kOhm	680	57.11.4684	R•••353	
					MF	0.25W	5%	kOhm	680	57.11.4684	R354	
					MF	0.25W	5%	kOhm	680	57.11.4684	R•••355	
					MF	0.25W	1%	kOhm	470	57.11.3474	R•••356	
					MF	0.25W	1%	kOhm	3 • 9	57.11.3392	R357	
					MF	0.25W	1%	kOhm	6.8	57.11.3682	R•••358	
					MF	0.25W	10%	MOhm	10	57.11.6106	R•••359	
					MF	0.25W	10%	MOhm	10	57.11.6106	R•••360	
					MF	0.25W	1%	kOhm	15	57.11.3153	R•••361	
					MF	0.25W	5%	kOhm	4•7	57.11.4472	R•••362	
					MF	Ü•25₩	5%	kOhm	4•7	57.11.4472	R363	
					MF	0.25W	5%	kOhm	22	57.11.4223	R•••364	
St	R165	see	resistor,	iable	g•var	neg.lo	10%	kOhm	10		R•••365	
					MF	U . 25W	5%	kOhm	6 • 8	57.11.4682	R•••366	
					MF	0.25W	2%	kOhm	1.3	57.11.3132	R•••367	
					MF	0.25W	5%	kOhm	3.3	57.11.4332	R•••368	
					MF	0.25W	5%	kOhm	4•7	57.11.4472	R•••369	
					MF	0.25W	5%	kOhm	33	57.11.4333	R•••370	
					MF	0.25W	5%	kOhm	3 • 3	57.11.4332	R•••371	
					MF	0.25W	5%	kOhm	3 • 3	57.11.4332	R•••372	
					MF	0.25W	5%	kOhm	33	57.11.4333	R•••373	
	R174	see	resistor,	iable	g.var	pos.lo	20%	kOhm	10		R•••374	
					MF	Ŭ•25W	5%	kOhm	3.3	57.11.4332	R•••375	
					MF	0 • 25W	5%	kOhm	100	57.11.4104	R•••376	
					MF	0.25W	5%	k0hm	3.3	57.11.4332	R•••377	
					MF	0.25W	5%	kOhm	100	57.11.4104	R•••378	
					MF	0.25W	5 %	kOhm	100	57.11.4104	R•••379	
					ME	0.25W	5%	kOhm	100	57.11.4104	R•••380	
					MF	U.25W	5%	kOhm	100	57.11.4104	R•••381	
					MF	0.25W	5%	kChm	3.3	57.11.4332	R • • • 382	
					ME	U • 25W	5%	kOhm	100	57.11.4104	R•••383	
					MF	0.25W	5%	kOhm	100	57.11.4104	R•••384	
					MF	0.25%	5%	kOhm	100	57.11.4104	R385	
					MF	0.25W	5%	kOhm	*100	57.11.4104	R•••386	

IND.	POS.NO.	PART NO.	VALUE	SPECIFICAT	IONS / 8	QUIVALENT	MANUF
	Ř•••387	57.11.4332	*3•3 kOhm	5% ܕ25i	√ MF		
	R388	57.11.4104	*100 kOhm	5% 0.25	MF MF		
	R389	57.11.4104	*100 k0hm	5% U.251	N MF		
	R390	57.11.4104	*100 kOhm	5% 0.251	N MF		
	R391	57.11.4104	*100 kOhm	5% 0.251	MF		
	R392	57.11.4332	*3.3 kOhm	5% 0.25	ME ME		
	R393	57.11.4104	*190 kOhm	5% 0.251	N MF		
	R • • • 394	57.11.4104	≉100 kOhm	5% 0.251	4 MF		
	R395	57.11.4104	 \$100 k0hm	5% 0.25	# MF		
	R • • • 396		not used				
	R•••397	57.11.4103	10 kOhm	5% 0.251	N ME		
	R • • • 398	57.11.4104	100 kOhm	5% 0.25	4 MF		
	R • • • 399	57.11.4104	100 kOhm	5% 0.25	N MF		
	R • • • 400	57.11.4103	10 kOhm	5% J.251	N ME		
	R401	57.11.4104	100 kOhm	5% 0.25%	4 WE		
	R • • • 4 G 2	57.11.4104	iO∪ kOhm	5% 0.251	4 ME		
	R • • • 403	57.11.4104	100 kOhm	5% Û.251	√ MF		
	R•••404	57.11.4330	33 Onm	5% U.25	4 WE		
	R • • • 405		1.8 kOhm	5% 0.25V	1 MF	57114182	option ?
(01)	R • • • 406		not used				
(01)	R • • • 407	57.11.4109	1 Ohm	5% 0.25	4 ME		
	R • • • 501	57.11.4104	100 kOhm	5% û•25	√ MF		
	R • • • 5 C 2	57.11.4474	470 kOhm	5% 0.25V	√ MF		
	R•••503	57.11.4105	1 MOhm	5% ܕ251	1 WE		
	R504	57.11.4105	1 MOhm	5% 0 • 25 V	N ME		
	R505	57.11.4104	100 kOhm	5% U • 25%	N MF		
	R • • • 506	57.11.4474	470 kOhm	5% J.25V	V MF		
	R507	57.11.4105	1 MOhm	5% 0 • 25V	N ME		
	R • • • 508	57.11.4104	100 kOhm	5% U•25v	N MF		
	R•••509	57.11.4474	470 kÖhm	5% U.25k	√ ME		
	R510	57.11.4105	1 MOhm	5% 0 • 25V	1 MF		
	R•••511	57.11.4104	100 kOhm	5% 0.25			
	R•••512	57.11.4474	4 7 0 kOhm	5% 0·25%	N MF		
	Ř•••513	57.11.4105	1 :40hm	5% 0.251	N MF		
	R•••514	57.11.4104	100 kOhm	5% û•25v	V MF		
	R515	57.11.4104	100 kOhm	5% 0.25v			
	R516	57.11.3472	4.7 kOhm	1% Ú•25v	MF MF		
STU	D E R (04)	84/10/04 TA	STEREO-1	NPUT-4CH/8CH		1.912.250	0.00 PAGE 1

IND.	POS.NO.	PART NO.	VALUE	SPECIF	ICATION	S / EQUIVALENT		MA	NUF.
	R•••517	57.11.4154	150 kOhm	2%	0.25W	MF			
	R•••518	57.11.3472	4•7 kOhm	1 %	0.25W	MF			
	R519	57.11.4154	150 kOhm	2 %	0.25W	MF			
	R•••520	57.11.4223	22 kOhm	5%	J.25W	MF			
	R • • • 521	57.11.4103	10 kOhm	5∜	0.25W	MF			
	R • • • 522	57.11.6106	10 MOhm	10%	J.25W	wF			
	R•••523	57.11.4104	190 kOhm	5%	0.25W	MF ·			
	R • • • 524	57.11.4474	470 kOhm	5%	0.25W	MF			
	R•••525	57.11.4105	1 MOhm	5%	0.25W !	MF			
(01)	R526	57.11.4105	1 MOhm	5%	0.25W	MF			
	R527	57.11.4103	10 kOhm	5%	0.25W	4F			
	R • • • 528	57.11.4134	100 kOhm	5%	0.25W I	4F			
	R • • • 529	57.11.4105	1 MOhm	5%	0.25W I	ሳ F			
	R • • • 530	57.11.4104	100 kOhm	5%	0.25W	MF			
	R•••531	57.11.4331	330 Ohm	5%	0.25W !	4F			
	R•••532	57.11.4331	330 Ohm	5%	0.25W 1	MF.			
	R • • • 533	57.11.4103	10 kOhm	5%	0.25W I	4F			
	R • • • 534	57.11.4335	3.3 MOhm	5%	0.25W 1	4F			
	R • • • 535	57.11.4103	1J kOhm	5%	0.25W :	1F			
	R536	57.11.4331	33) Ohm	5%	0.25W #	1F			
	K • • • 537	57.11.4104	10u kOhm	5%	0.25W 1	KF.			
	R•••538	57.11.4105	1 MOhm	5%	0.25W N	1F			
	R539	57.11.4104	100 kOhm	5%	0.25W M	4F			
	R • • • 540	57.11.4104	100 kOhm	5%	0.25W N	4 F			
	R•••541	57.11.4104	100 kOhm	5%	0.25W M	1F			
	R • • • 542	57.11.4104	100 kOhm	5%	0.25W ·	47			
	R•••543	57.11.4104	100 kOhm	5%	0.25W !	1F			
	R • • • 544	57.11.4105	1 MOhm	5%	0.25W A	1F			
	R • • • 545	57.11.4473	47 kOhm	5%	0.25W A	!F			
	R • • • 545	57.11.4331	330 Ohm	5%	0.25W M	1F			
	R • • • 547		not used						
	R • • • 548	57.11.4331	330 Ohm	5%	0.25W N	!F			
	R•••549		not used						
	R • • • 550	57.11.4332	3.3 kOhm	5%	0.25W A	!F			
	R•••551	57.11.4223	22 kOhm		0.25W M	1F			
	R•••552	57.11.4223	22 kOhm	5%	0.25W M	1F			
	R•••553	57.11.4393	39 kOhm	5%	0.25W M	1F			
STU	D E R (04) 84/10/04 TA	STEREO-II	NPUT-4CH	/8ÇH	1.912.250	• 00	PAGE	14

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	R•••554	57.11.3362	3•6 kOhm	5% 0.25W MF	
	R • • • 555	1.912.001.42	10 kOhm	20% pos.log.variable resistor	St
	R556	57.11.4332	3∙3 kOhm	5% 0.25W MF	
	R557	1.912.001.42	10 kOhm	20% pos.log.variable resistor	St
	R•••558	57.11.4332	3.3 kOhm	5% 0.25W MF	
	R • • • 559	1.912.001.42	10 kOhm	20% pos.log.variable resistor	St
	R•••560	57.11.4332	3∙3 kOhm	5% 0.25W MF	
	R561	57.11.4102	1 kOhm	5% U.25W MF	
(01)	R • • • 562	57.11.4681	680 Ohm	5% 0.25W MF	
	R•••563	57.11.4471	470 Ohm	5% U.25W MF	
	R564	57.99.0206	50 Ohm	PTC Philips Nr.2322 660	91008
	R•••565	57.99.U2Ü9	5•6 Ohm	PTC Philips Nr.2322 662	91005
	R•••566	57.99.0209	5.6 Ohm	PTC Philips Nr.2322 662	91005
	R•••567	57.99.0209	5.6 Ohm	PTC Philips Nr.2322 662	91005
	R•••568				
	R•••569				
	S101		2*U	3u gold 55150003 option	2 ITT
	S•••102		not used		
	S103	55.15.0004	4*U	3u gold button: 55030303 red	ITT
	S•••104		2*U	combined with variable resistor R 174	St
	S • • • 105	55•15•0002	2*U	button: 55030303 red	ITT
	S106	55.15.0002	2 ÷ U	button: 55030303 red	ITT
	S107	55.15.0002	* 2 * U	button: 55030303 red	ITT
	S108	55.15.0002	* 2 * U	button: 55030303 red	ITT
	5 • • • 301		2**∪	3u gold see S101	
	S • • • 302		not used		
	\$ • • • 3 03		4*U	3u gold — see S103	
	S • • • 304		2*∪	combined with variable resistor R 174	5 t
	S • • • 305		2 ¥U	55150012 option	1 ITT
	\$ • • • 306		2*U	55150012 option	
	S307		2*∪	55150012 ontion	
	S • • • 308		2*U	55150012 option	
	S • • • 501		1*U		ght•CK
	S • • • 502		2*4	rotary-switch 55130003	St
	\$ • • • 503		1*U	toggle-switch 55010159 diali	
	S • • • 504		1*∪	combined with variable resistor R 150	St
S T U	D E R (0	4) 84/10/04 TA	STERED-I	NPUT-4CH/8CH 1.912.250.00 P	AGE 15

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	S505 S506 S507 S508		1≠∪ 1∻∪ 1÷U 1÷∪	see 1.911.001.00 see 1.911.001.00 combined with variable resistor R 555 combined with variable resistor R 557	St St
	S • • • 509		1*∪	combined with variable resistor R 559	St
	T101 T301	1.022.451.00		input trafo 1:0.62 input trafo 1:3.62	St St

```
* ONLY 8-CHANNEL
==============
```

```
(01) 29.06.83 quality improvement
```

optional 1: 8-switches for 8-master-select

optional 2: with equalizer pcb

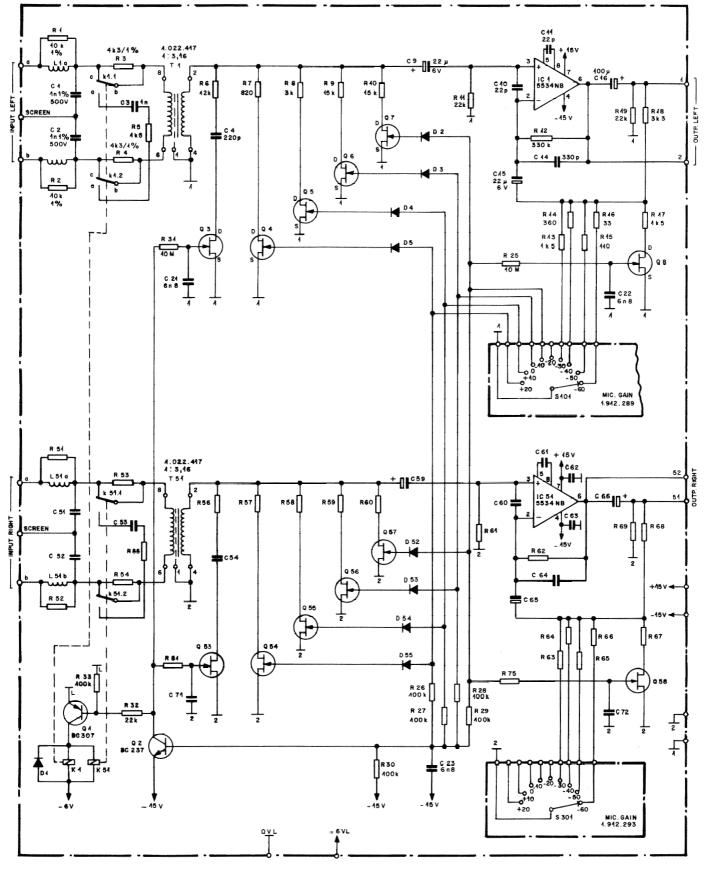
CE=Ceramic, CF=Carbon Film, EL=Electrolytic, MF=Metal Film, PE=Polyester, PP=Polypropylen, PS=Polystyrol

MANUFACTURER: Bu=Burndy, Ex=Exar, Fc=Fairchild, GI=General Instrument HP=Hewlett Packard, ITT=Intermetall, Mot=Motorola, NS=National Semiconductors, Ph=Philips, Ra=Raytheon, Sig=Signetics, Six=Siliconix, St=Studer, Tl=Texas Instrument, CK=C&K

ORIG 83/03/23 (01) 83/06/29 (02) 83/09/15 (03) 84/02/27 (04) 84/10/04

^{(02) 15.09.83} improvement of low frequency noise (03) 27.02.84

^{(04) 04.10.84} suppression of high frequency

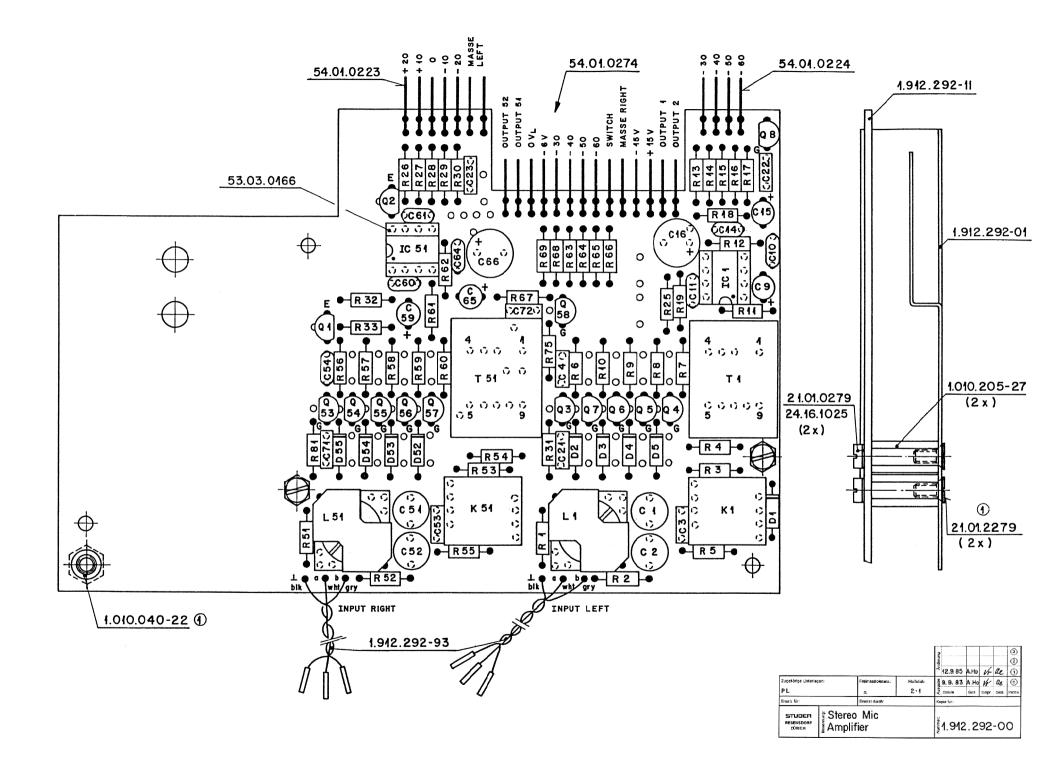


ALL D = 1N 4448

ALL FET = J442

POS.NR.: 4...49 LEFT 54...99 RIGHT

DATE:	26.40, 83	
SIGN: STUDER REGENSDORF ZÜRICH	STEREO MIC. AMPLIFIER	SC 1.912.292



IND. POS.N	D. PART NO.	VALUE	SPECIF	CATIO	NS /	EQUIVALENT	MANUF.
_							
ç		1 nF	1%	500V	PP		
č		1 nF	13	500V	PP PE		
C		1 nF 220 pF	10% 5%	204	CE		
č		not used	24		CE		
č		not used					
č		not used					
č		not used					
č		22 uF	-20%	6.3V	TA		
C		22 pF	5%		CE		
C		22 pF	5%		CE		
C :		330 pF	5%		CE		
C		22-uF	-20%	6.34	TA		
(01) C		100 uF	-20%	100	EL		
Ç • • • • !		not used					
Ç • • • • !		not used					
C		not used					
		not used	10%	500	PF		
C		6.8 nF 6.8 nF	10%	50V	PE		
č		6.8 nF	10%	50V	PE		
č		not used		,			
č		not used					
C		1 nF	1%	500V	PP		
C !	2 59.05.1142	1 nF	1%	500V	PP		
C !	59.06.0102	1 nF	10%	50V	PE		
C !	59.34.4221	220 pF	5%		CE		
C !	5	not used					
Ç		not used					
Ç		not used					
ç	8	not used					
ç	9 59.30.2220	22 uf	-20%	6 • 3·V	TA		
C ć		22 pF	5% 5%		CE		
C		22 pF not used	24		C E		
Ç6		not used					
Č6		330 pF	5%		CE		
Ç6		22 uF	-20%	6.3V	TA		
Ç6		100 uF	-20%	16V	ÊĹ		
Č6		nat used		101			
Ç6		not used					
C6		nat used					
C 7		nat used					
C 7	1 59.06.0682	6.8 nF	10%	50V	PE		
C 7	2 59.06.0682	6+8 nF	10%	50V	PE		
D	1 50.04.0125	1N4448					any
0	2 50.04.0125	1N4448					any
0		1N4448					any
0	4 50.04.0125	184448					any
0	5 50.04.0125	184448					any
05	2 50.04.0125	1N4448					any
05		184448					any
05		1N4448					any
05	5 50.04.0125	18448					any
IC	1 50.05.0244	NESS34AN	single	00. 8	mn.	low noise	Ti,Sig,Ra
105	1 50.05.0244	NESS34AN	single			low noise	Ti,Sig,Ra
			-		•		-
Ķ		5 V	relais relais				
K5	1 36.04.0170	> v	relais				
L	1.022.207.00		HF-sym.	coil			
L 5	1 1.022.207.00		HF-sym.				
_							
Q		BC 307 BC 237		C>100			any
9		BC 237		C>100	nA+ E	3>100	any
9		J 112	N-JFET				NS.Mot.Six
9		J 112 J 112	M-JFET M-JFET				NS,Mot,Six
9		J 112	N-JFET				NS,Mot,Six
0		J 112 J 112	N-JFET				NS,Mot,Six NS,Mot,Six
Q		J 112	N-JFET				NS+Mot+Six
Q5		J 112	N-JFET				NS,Mot,Six
4			57 21				

IND. PUS.NU.	PAKI NU.	VALUE	SPECIFICATIONS /	
Q54	50.03.0350	J 112	N-JFET	NS,Mot,Six
Q55	50.03.0350	J 112	N-JFET	NS, Mot, Six
Q56	50.03.0350	J 112	N-JFET	NS+Mot+Six
457	50.03.0350	J 112	N-JFET	NS+Mot+Six
Q58	50.03.0350	J 112	N-JFET	NS, Mot, Six
44,0	30.03.0330	3	14 5. 2.	
R * * * * * 1	57.11.3103	10 kOhm	1% 0.25W MF	
R 2	57-11-3103	1d kOhm	1% 0-25W MF	
K 3	57.11.3432	4.3 kOhm	1% 0-25W MF	
R 4	57-11-3432	4.3 kOhm	1% 0-25W MF	
R 5	57.11.4152	1.5 kOhm	1% 0.25W MF 1% 0.25W MF 1% 0.25W MF 1% 0.25W MF 5% 0.25W MF 2% 0.25W MF 2% 0.25W MF 2% 0.25W MF 2% 0.25W MF 2% 0.25W MF 2% 0.25W MF 2% 0.25W MF 2% 0.25W MF 2% 0.25W MF 2% 0.25W MF 2% 0.25W MF 2% 0.25W MF 2% 0.25W MF 2% 0.25W MF	
R 6	57.11.4123	12 kOhm	5% 0.25W MF	
R 7	57.11.4821	8 2 0 Ohm	2% 0.25W MF	
R 8	57.11.3302	3 kOhm	2% 0.25W MF	
R 9	57.11.4153	15 kOhm	2% 0.25W MF	
R10	57.11.4153	15 kOhm	2% 0.25W MF	
R11	57.11.4223	22 kOhm	5% 0.25W MF	
R12	57.11.4334	330 kOhm	5% 0.25W MF	
R13	57.11.4152	1.5 kOhm	2% 0.25W MF	
R 14	57.11.3361	360 Ohm	2% 0+25W MF	
R15	57.11.3111	110 Ohm	2% 0+25W MF	
R16	57.11.4330	33 Ohm	2% 0.25W MF	
R17	57.11.4152	1.5 kOhm	2% 0.25W MF	
R18	57.11.3332	3.3 kOmm	2% 0.25W MF	
R19	57.11.4223	22 kOhm	5% 0.25W MF	
R21		not used		
R22				
R23		not. used		
R24		not used		
R 25	57.11.6106	10 /40hm	10% 0.25W MF	
R26	57 - 11 - 4104	100 kOhm	5% 0.25W MF	
R27	57.11.4104	100 kOhm	5% 0.25W MF 5% 0.25W MF 5% 0.25W MF 5% 0.25W MF 5% 0.25W MF	
R28	57.11.4104	100 kOhm 100 kOhm	5% U•25W MF	
R29	57.11.4104	100 kOhm	5% U•25W MF	
R30	57.11.4104	10 405-		
R31	57.11.4106 57.11.4104 57.11.3103 57.11.3103 57.11.3432 57.11.4152 57.11.4152 57.11.4153 57.11.4153 57.11.4153 57.11.4223 57.11.4334 57.11.4336 57.11.4153 57.11.4153 57.11.4153 57.11.4153 57.11.4153 57.11.4153 57.11.4153 57.11.4153 57.11.4153	10 WOUM	10% 0.25W MF 5% 0.25W MF	eventuell kleiner
R••••32	57.11.4223	22 kOhm	5% 0.25W MF	eventueli kleiner
R33	57.11.4104	100 kunm	5% 0.25W MF	
R51	57.11.3103	10 KUNM	1% 0.25W MF	
R52	57-11-3103	10 KUNM	1% 0-25W MF	
R53 R54	57.11.3432	4.3 KUNM	1% 0.25W MF 1% 0.25W MF	
R55	57 11 4162	1 6 kOhm	5% 0.25W MF	
R56	57-11-4123	12 kOhm	5% 0.25W MF	
R57	57-11-4821	620 Ohm	2% 0.25W MF	
R 58	57-11-3302	3 kOhm	2% 0.25W MF	
R 59	57.11.4153	15 kOhm	2% 0.25W MF	
R60	57.11.4153	15 kOhm	2% 0.25W MF	
R61	57.11.4223	22 kOhm	5% 0.25W MF	
R62	57.11.4334	330 kOhm	5% 0.25H MF	
R63	57.11.4152	1.5 kOhm	2% 0.25W MF	
R64	57.11.3361	360 Ohm	2% 0.25W MF	
R65	57.11.3111	110 Ohm	2% 0.25W MF	
R • • • • 66	57.11.4330	33 Ohm	2% 0-25W MF	
R67	57.11.4152	1.5 kOhm	2% 0.25W MF	
R68	57.11.3332	3.3 kOhm	2% 0.25W MF	
R • • • • 69	57.11.4223	22 kOhm	5% 0.25W MF	
R71				
R72		not used		
R73		not used		
R 74		not used		
R75	57-11-6106	10 MOhm	10% 0.25W MF	
R81	57.11.6106	10 MOhm	10% 0.25W MF	
•		1 4.1	combined with FF	
S2		1⊅U 2⊅U	combined with K1	
S2 S51		2*U 1*U	combined with K1	
S52		2*U	combined with K1	
3 . a 3 2		2~0	combined with K1	
T1	1.022.417.00		inout trafo 1:3 1	
T51	1.022.417.00		input trafo 1:3.1 input trafo 1:3.1	
			put traio 1.3.1	
×1C	53.03.0166		IC-socket	
	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		John L	
CE=Ceramic, CF=(arbon Film. EL=	Electrolytic.	MF=Metal Film.	
PE=Polvester . Pi	P=Polypropylen,	PS=Polystyrol		
,	, p p ,			

VALUE SPECIFICATIONS / EQUIVALENT

MANUF.

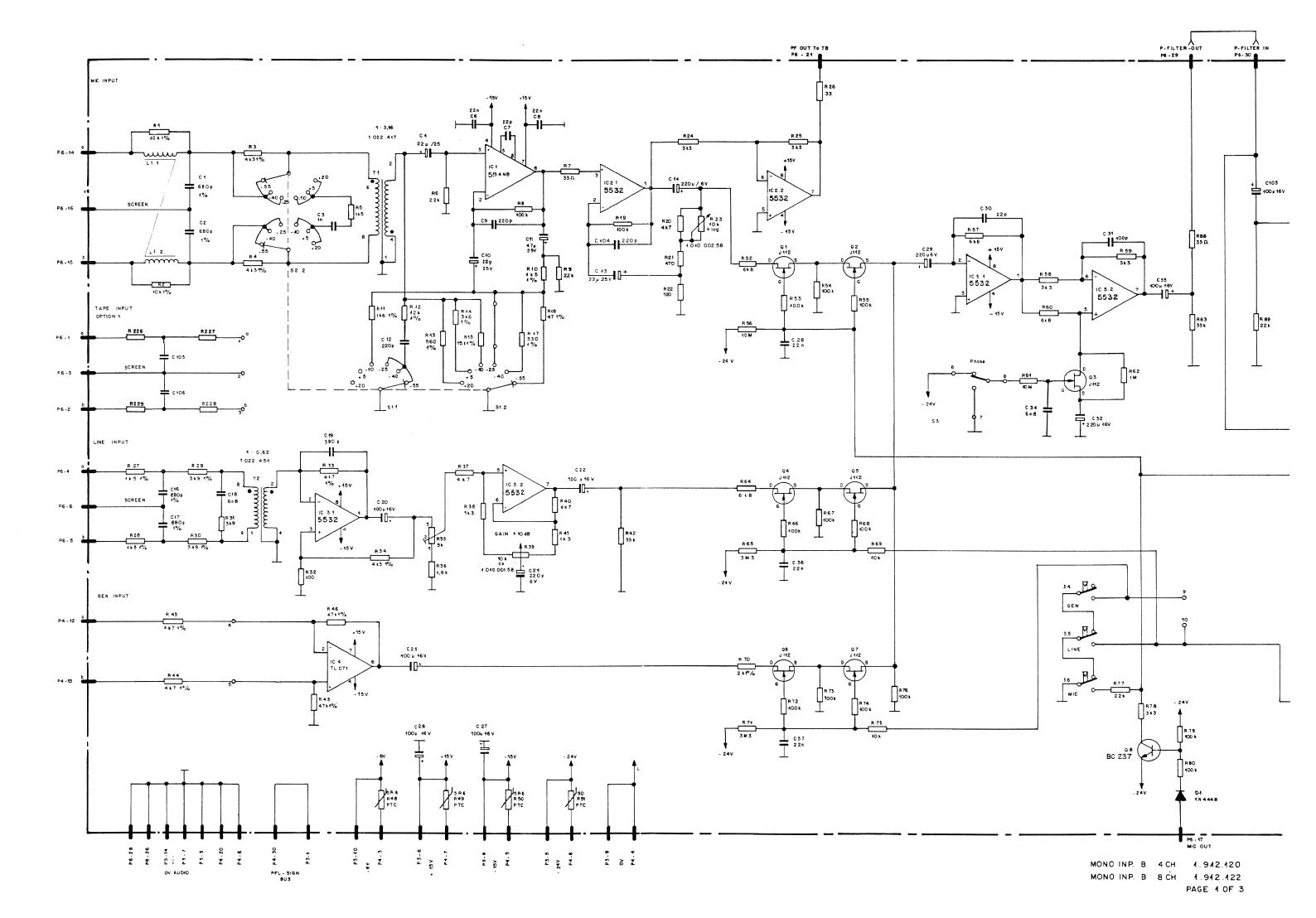
MANUFACTURER: Bu*Burndy, Ex*Exar, Fc=Fairchild, GI=General Instrument HP#Hewlett Packard, ITT=Intermetall, Mot=Motorola, NS=National Semiconductors, Ph=Philips, Ra=Raytheon, Sig=Signetics, Six=Siliconix, St=Studer, TI=Texas Instrument

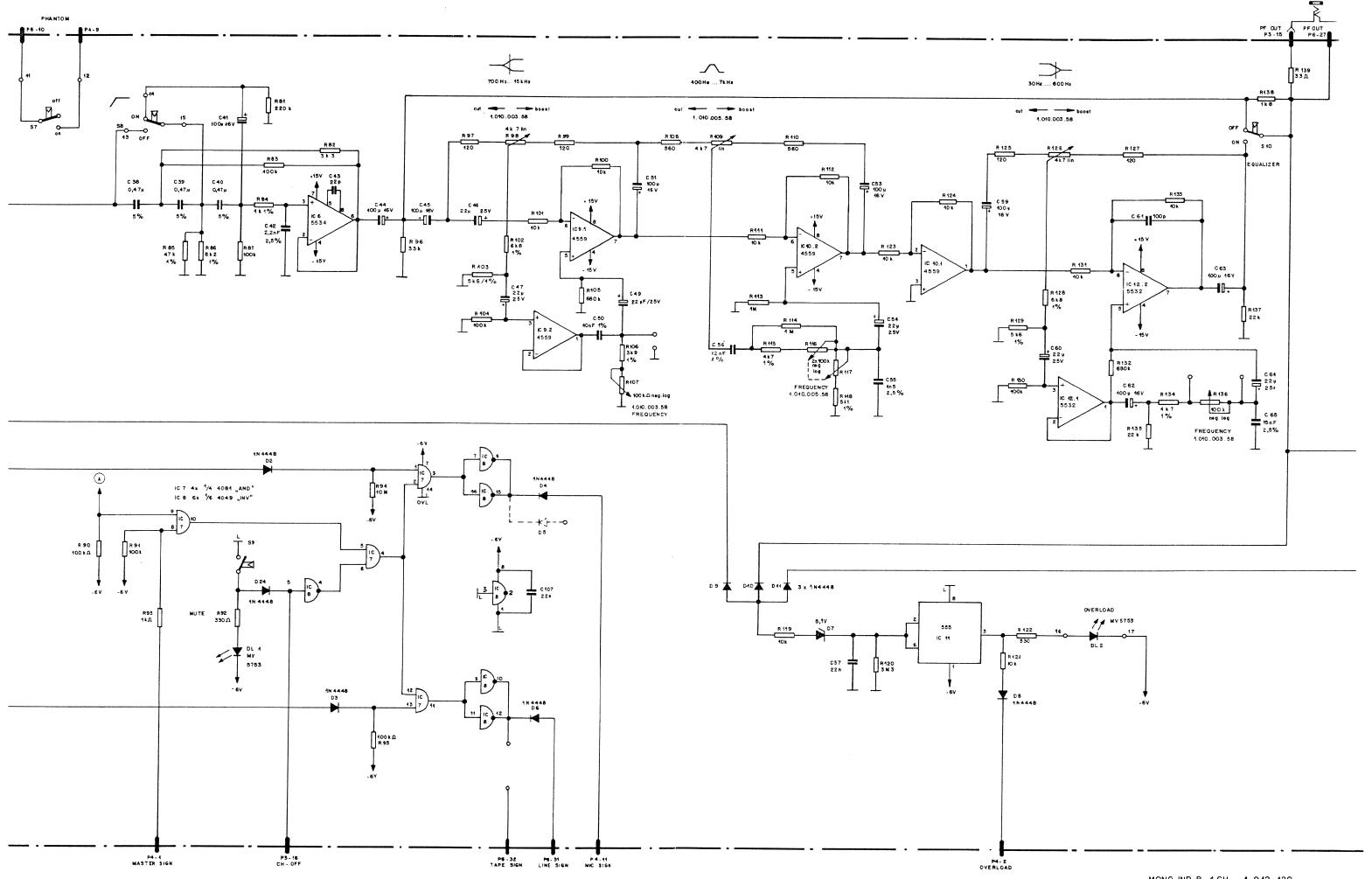
ORIG 83/03/29 (4) 84/02/27

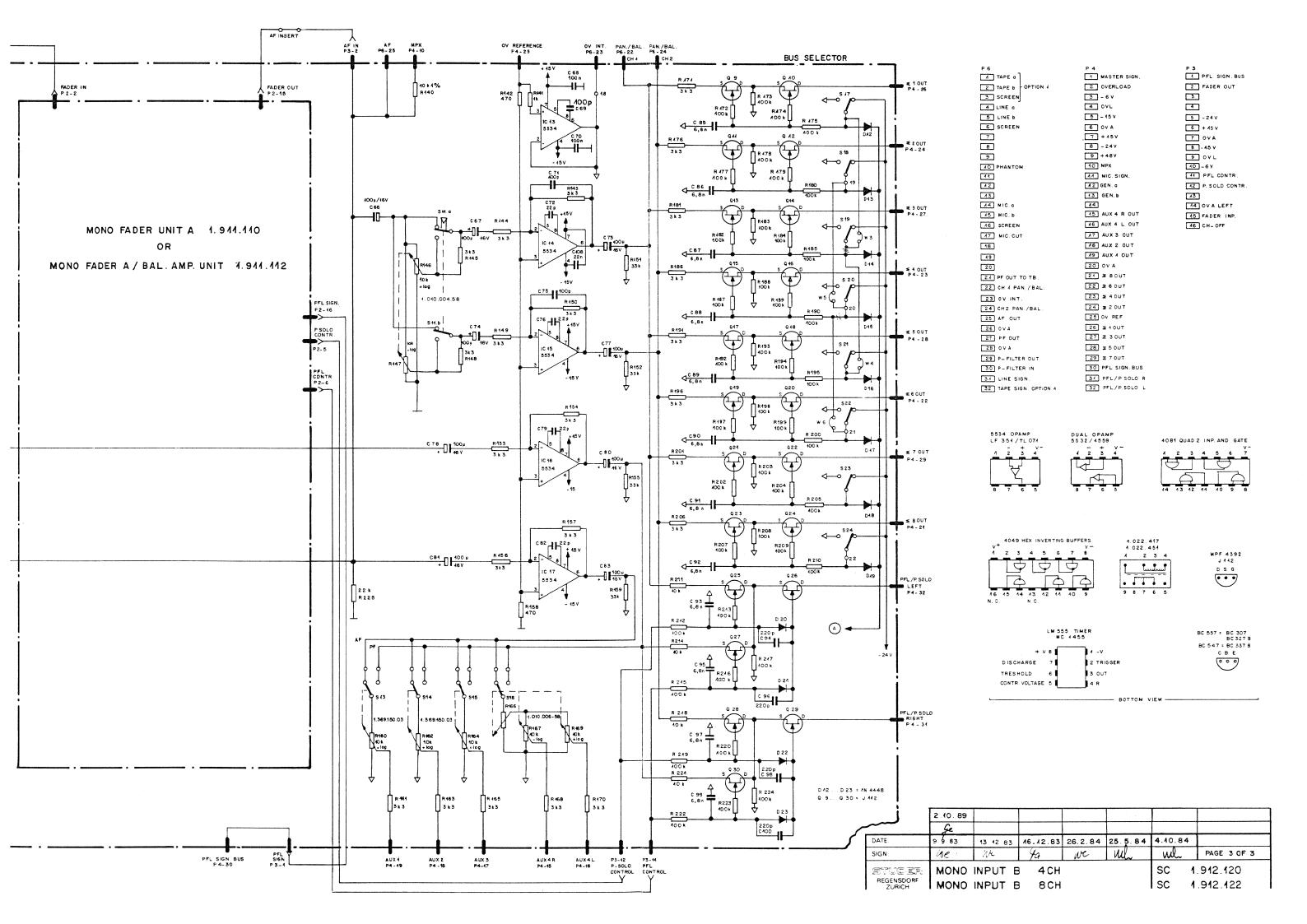
IND. POS.NO.

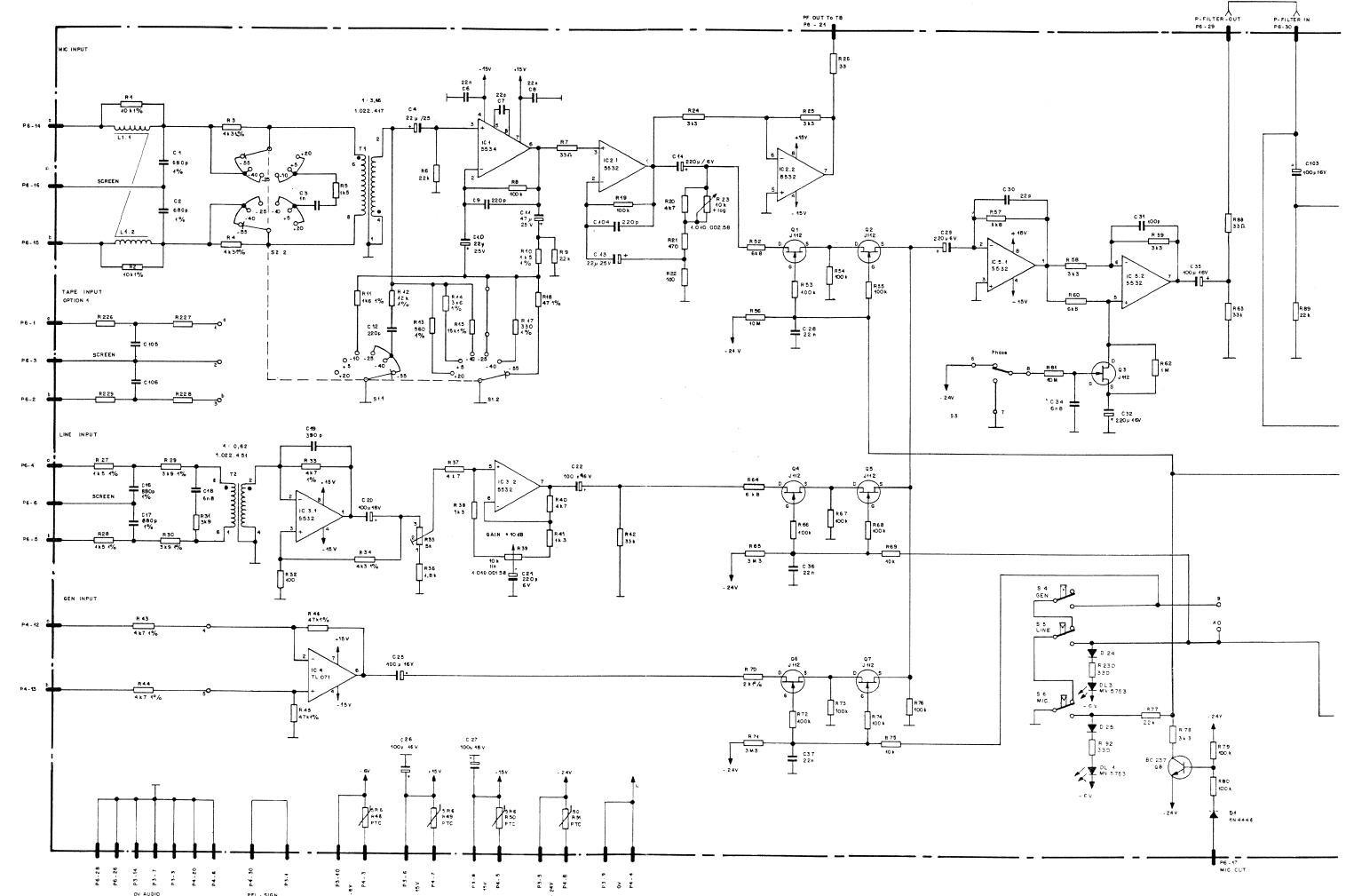
PART NO.

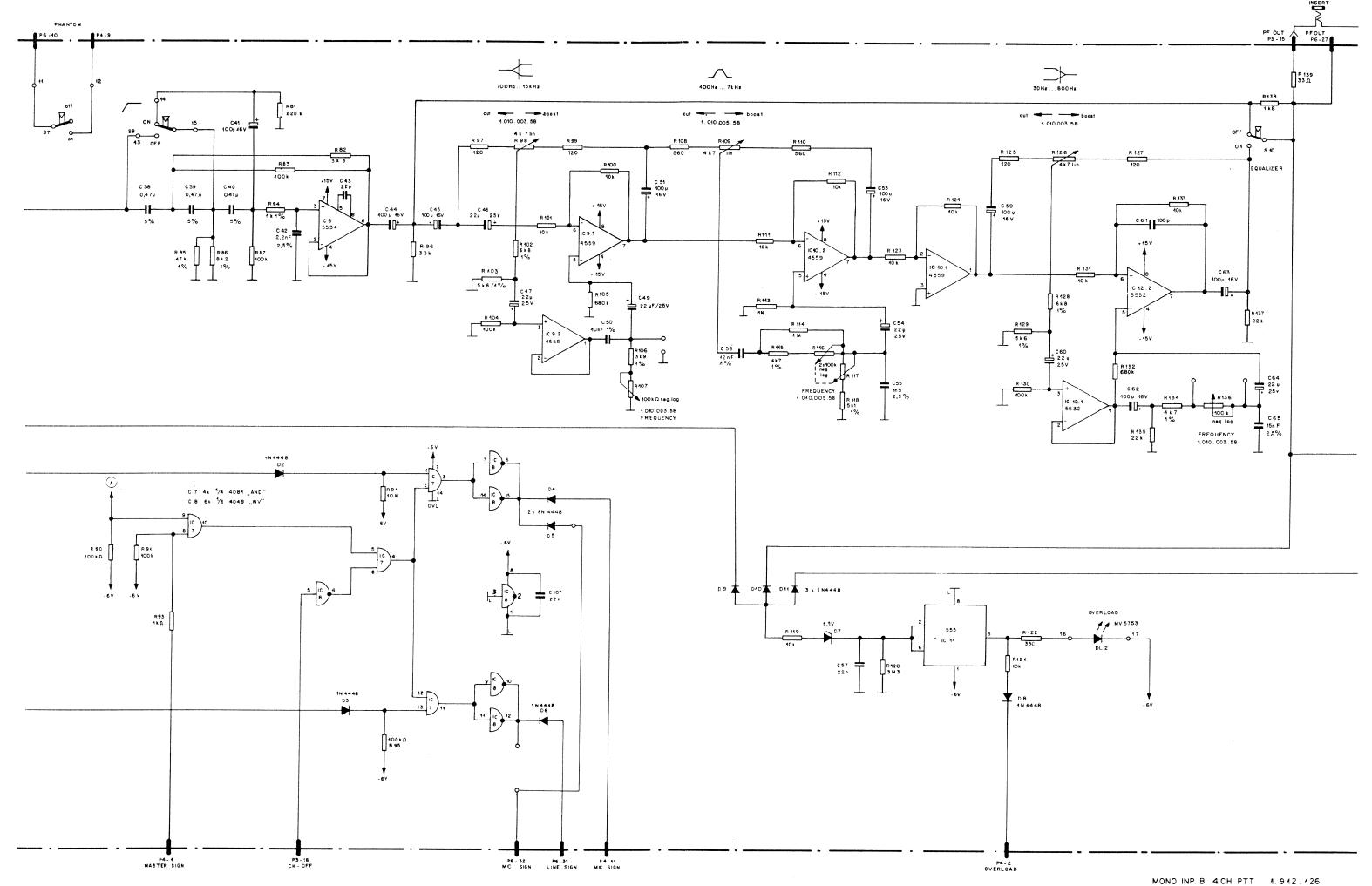
S T U D E R 83/03/29 AE MICROPHONE-AMPLIFIER-STERED 1.912.292.00

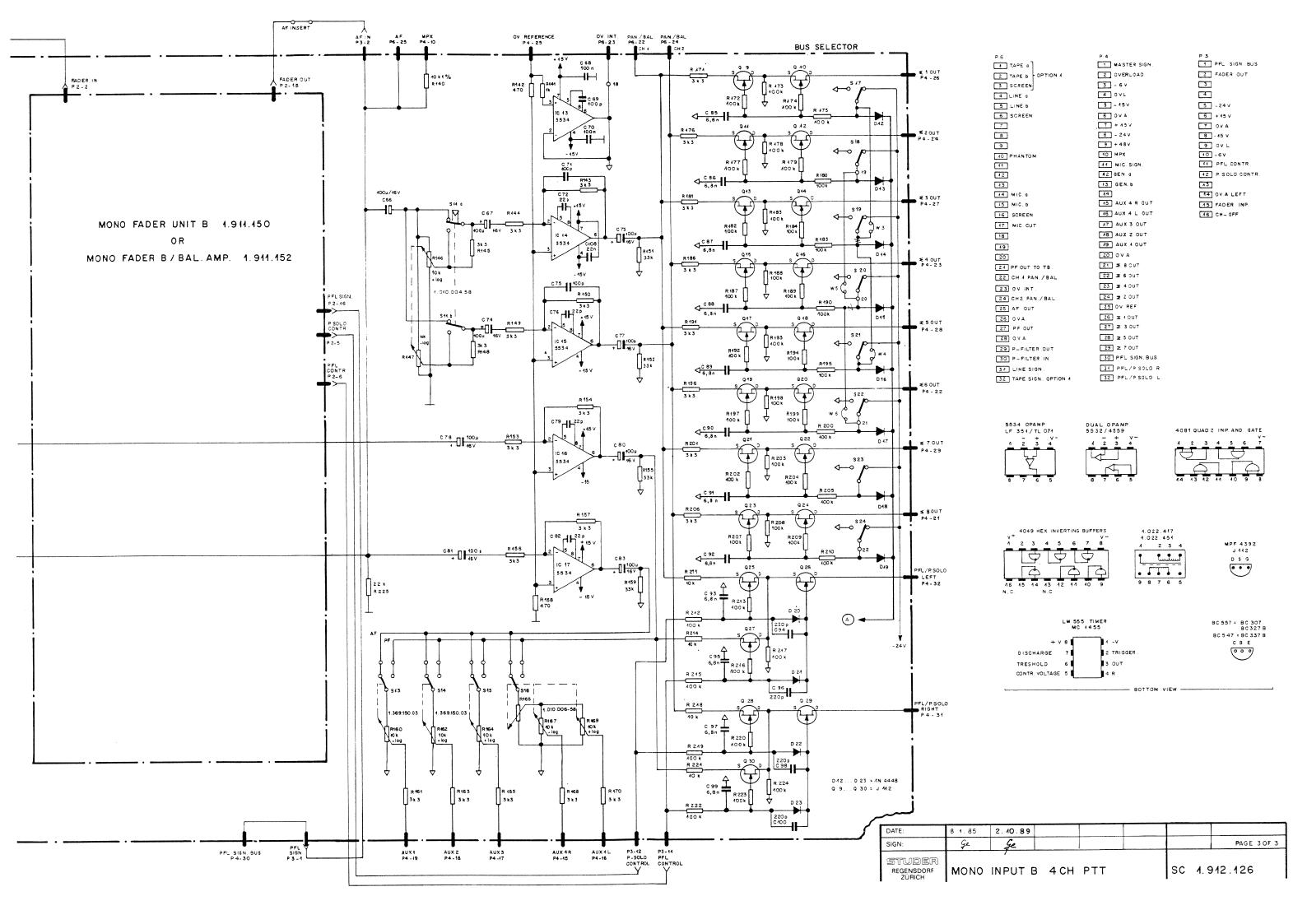


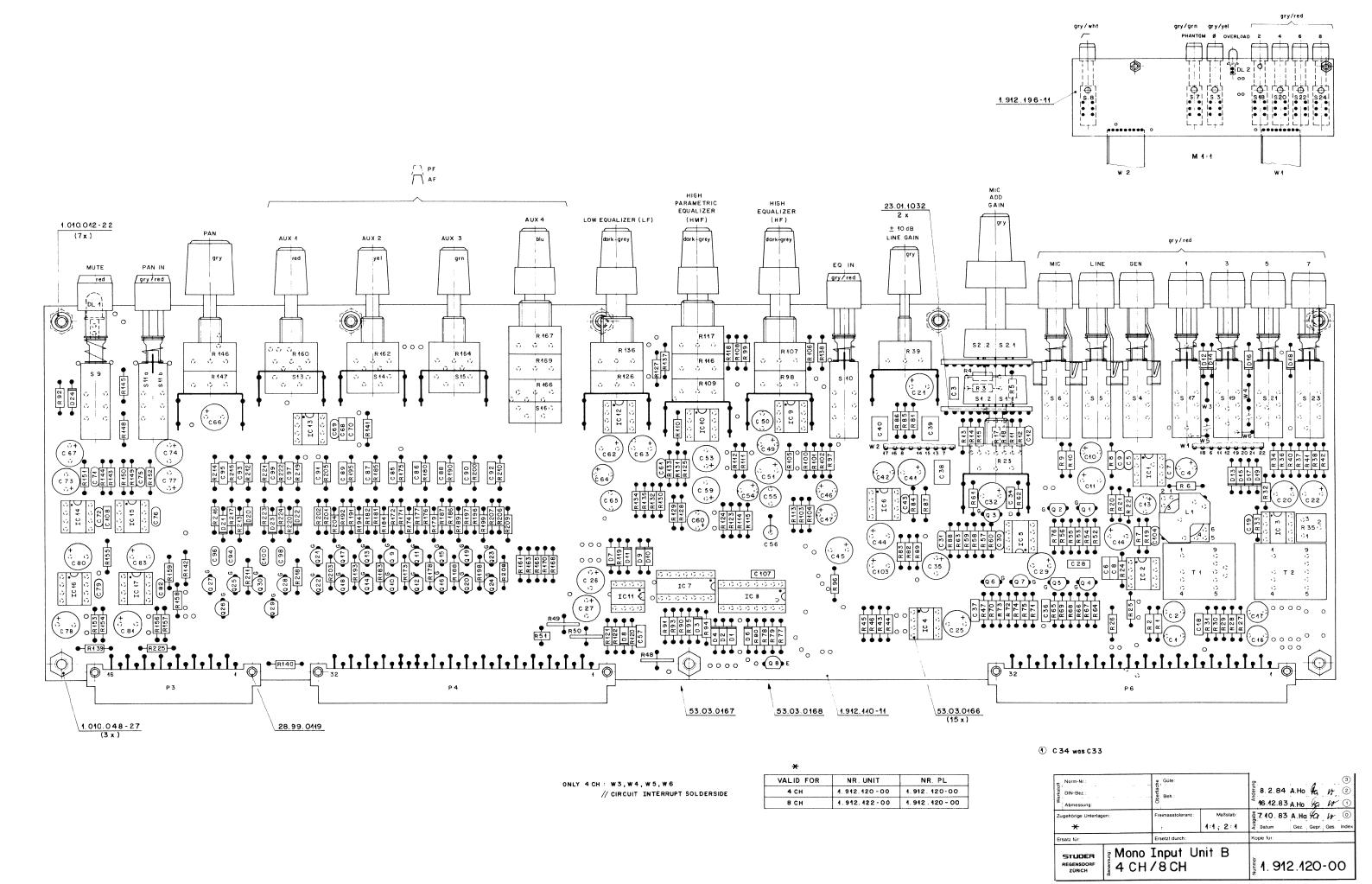


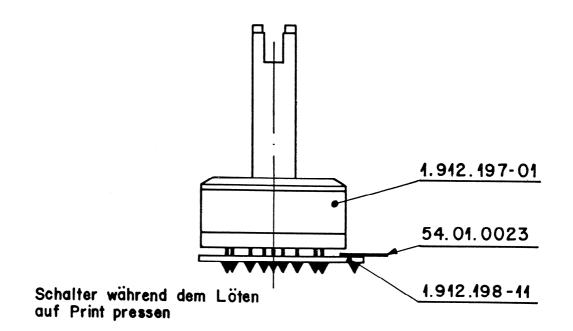


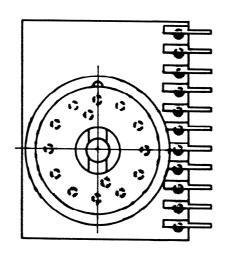




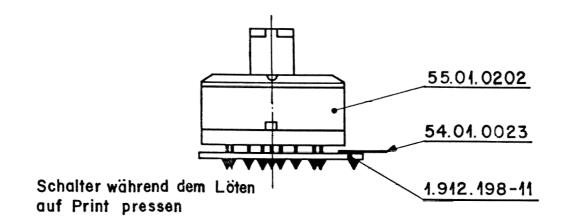


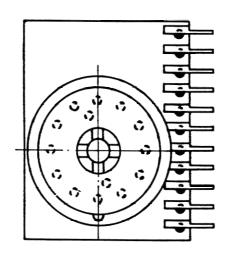






	REGENSOORF ZORICH SWITCH - Board - B 1						1.912	.19	7-	00)
Er	satz für:	1	Ers	Ersetzt durch:			pie für:				
L	Zugehörige Unterlagen:			± 2:1			Datum	Gez.	Gepr.	Ges.	Index
Ζu				Freimasstoleranz: Maßstab:			6.5.83	A.Ho	1	Ic,	0
L	Abmessung:			ŏ							1
Werkstoff	DIN-Bez.:		Oberfläche	Beh.:		Anderung					2
toff	Norm-Nr.:		g	Güte:] e					3





	STUDER REGENSDORF ZÜRICH Switch - Board - B 2						1.91	2.1	98	8-O	00
Er	satz für:		Ers	etzt durch:		Ko	pie tür:				1
			3	± 2:1			Datum	Gez.	Gepr.	Ges.	Index
Zι	gehörige Unterlagen:			Freimasstoleranz: Maßstab:			6.5.83	A.Ho	Vr	49	0
3	Abmessung:		ð		Änderu					1	
Werkstoff	DIN-Bez.:			Beh.:							2
ję.	Norm-Nr.:		Güte:			p					3

A1 1.912.197.00 SWITCH-BOARD-B1 A2 1.912.198.00 SWITCH-BOARD-B2 C1 59.05.1681 680 pF 1% 500V PP C2 59.05.1681 680 pF 1% 500V PP C3 59.06.0102 1 nF 10% 50V PE C4 59.22.6220 22 uF -20% 25V EL C5 59.34.2220 22 pF 5% CE C6 59.06.0223 22 nF 10% 50V PE C7 59.34.2220 22 pF 5% CE C8 59.06.0223 22 nF 10% 50V PE C8 59.06.0223 22 nF 10% 50V PE C9 59.34.4221 220 pF 5% CE	
C3 59.06.0102 1 nF 10% 50V PE C4 59.22.6220 22 uF -20% 25V EL	
C3 59.06.0102 1 nF 10% 50V PE C4 59.22.6220 22 uF -20% 25V EL	
C3 59.06.0102 1 nF 10% 50V PE C4 59.22.6220 22 uF -20% 25V EL	
C·····4 59·22·6220 22 uF -20% 25V EL	
C5 59-34-2220 22 pF 5% CE	
C5 59.34.2220 22 pF 5% CE C6 59.06.0223 22 nF 10% 50V PE	
C6 59.06.0223 22 nF 10% 50V PE	
C7 59.34.2220 22 pF 5% CE	
C·····7 59·34·2220 22 pF 5% CE C·····8 59·06·0223 22 nF 10% 50V PE	
C9 59.34.4221 220 pF 5% CE	
C••••10 59•22•6220 22 uF -20% 25V FL	
C····ll 59·22·5470 47 uF -20% 25V EL	
C12 59.34.4221 220 pF 5% CE	
C····12 59·34·4221 220 pF 5% CE C····13 59·22·6220 22 uF -20% 25V EL	
C····11 59·22·5470 47 uF -20% 25V EL C····12 59·34·4221 220 pF 5% CE C····13 59·22·6220 22 uF -20% 25V EL C····14 59·22·2221 220 uF -20% 6V EL	
C15 not used C16 59.05.1681 680 pF 1% 500V PP C17 59.05.1681 680 pF 1% 500V PP C18 59.06.0682 6.8 nF 5% 50V PE C19 59.34.5391 390 pF 5% CE C20 59.22.4101 100 uF -20% 6V EL	
C••••16 59•05•1681 680 pF 1% 500V PP	
C17 59.05.1681 68U pF 1% 500V PP	
C18 59.06.0682 6.8 NF 5% 50V PE	
C····19 59·34·5391 390 pF 5% CE	
C20 59.22.4101 100 UF -20% 16V FL	
C21 59.22.2221 220 uF -20% 6V EL	
C22 59.22.4101 100 uF -20% 16V EL	
C23 not used	
C····24 not used	
C25 59.22.41U1 100 UF -20% 16V EL	
C26 59.22.4101 100 uF -20% 16V EL	
C27 59.22.4101 100 uF -20% 16V EL	
C28 59.06.0223 22 nF 50V PF	
C29 59.22.2221 220 uF -20% 6V EL	
C30 59.34.2220 22 pF 5% CE	
C31 59.34.4101 100 pF 5% CE	
C32 59.22.221 220 uF -20% 6V EL	
(01) C33 not used	
(01) C34 59.06.0682 6.8 nF -20% 50V PE	

S T U D E R (03) 84/10/04 TA MONO-INPUT-UNIT-B-4CH/8CH 1.912.120.00 PAGE 1

IND.	POS•NO•	PART NU.	VALUE	SPECIF	ICATIONS /	EQUIVALENT	MAN	UF.
	C • • • • 35	59.22.4101	100 uF	-20%	16V EL			
	C••••36	59.06.0223	22 nF		50 V PE			
	C • • • • 37	59.06.0223	22 nF		50V PE			
	C • • • 38	59.06.5474	470 nF	5%	50V PE			
	C••••39	59.06.5474	470 nF	5%	50 V PE			
	C • • • • 40	59.06.5474	470 nF	5%	50V PE			
	C • • • • 41	59.22.4101	100 uF	-20%	16V EL			
	C • • • • 42	59.05.2222	2•2 nF	2.5%	50V PP			
	C • • • • 43	59.34.2220	22 pF	5%	CE			
	C • • • 44	59.22.4101	1CJ uF	-20%	16V EL			
	C••••45	59.22.4101	100 uF	-20%	16V EL			
	C • • • 46	59.22.6220	22 uF	-20%	25 V EL			
	C • • • • 47	59.22.6220	22 uF	-20%	25V EL			
	C • • • 48		not used					
	C • • • • 49	59.22.6220	22 uF	−20%	25V EL			
	C • • • • 50	59.05.1103	l∂ nF	1 %	50V PP			
	C••••51	59.22.4101	100 uF	- 20%	16V EL			
	C • • • • 52		not used					
	C • • • • 53	59.22.4101	100 uF	-20%	16V EL			
	C•••54	59.22.6220	22 uF	-20%	25V EL			
	C • • • • 55	59.05.2152	1.5 nF	2.5%	50V PP			
	C•••56	59.12.7123	12 nF	1%	50V PS			
	C • • • • 57	59.06.0223	22 nF	10%	50 V PE			
	C • • • 58		not used					
	C • • • • 59	59.22.4101	100 uF	-20%	16V EL			
	C • • • • 6U	59.22.6220	22 uF	-20%	25V EL			
	C•••61	59.34.4101	100 pF	5%	CE			
	C•••62	59.22.4101	100 uF	-20%	16V EL			
	C•••63	59.22.4101	100 uF	-20%	16V EL			
	C•••64	59.22.6220	22 uF	-20%	25V EL			
	C • • • 65	59.05.2153	15 nF	2.5%	50V PP			
	C • • • • 66	59.22.4101	100 uF	-20%	16V EL			
	C • • • 67	59.22.4101	100 uF	-2Ú%	16V EL			
	C68	59.06.0223	22 nF	1∪%	SOV PE			
(03)	C•••69	59.34.4101	100 pF	5%	CE			
	C••••70	59.06.0223	22 nF	1.0%	50V PE			
	C • • • • 71	59.34.4101	100 pF	5%	C E			
S T U	D E R (03) 84/10/04 TA	MONO-INP	UT-UNIT-	B-4CH/8CH	1.912.120.00	PAGE	2

IND.	POS • NO •	PART NO.	VALUE	SPECI	FICATION	ONS / 1	EQUIVALENT		MA^	IUF
	C • • • • 72	59.34.2220	22 pF	5%		CE				
	C • • • • 73	59.22.4101	100 uF	-20%	16V					
	C • • • • 74	59.22.4101	100 uF	-20%	16V					
	C • • • 75	59.34.4101	100 pF	5%	101	CE				
	C76	59.34.2220	22 pF	5%		CE				
	C • • • • 77	59.22.4101	100 uF	-20%	167					
	C • • • 78	59.22.4101	100 uF	-20%	16V					
	C • • • 79	59.34.2220	22 pF	5%	201	CE				
	083	59.22.4101	100 uF	-20%	160					
	C • • • 81	59.22.4101	100 uF	-20%	160	EL				
	C82	59.34.2220	22 pF	5%		CE				
	C • • • • 83	59.22.4101	100 uF	-20%	167	EL				
	C • • • 84		not used							
	C • • • 85	59.06.0682	6•8 nF		50 v	PΕ				
	C • • • 86	59.06.0682	6.8 nF		50V	PE				
	C • • • 87	59.06.0682	6.8 nF		50V	PE				
	C • • • 88	59.06.0682	6.8 nF		50V	PE				
	C • • • 89	59.06.0682	* 6.8 nF		50V	PE				
	C••••90	59.06.0682	* 6.8 nF		50V	PE				
	C91	59.06.0682	* 6.8 nF		500	ΡĒ				
	C • • • • 92	59.06.0682	* 6.8 nF		50V	PE				
	C • • • • 93	59.06.0682	6.3 nF		50 v	P E				
	C • • • 94	59.34.4221	220 pF	5%	J 0 1	ĊĒ				
	C • • • • 95	59.05.0682	6.8 nF		50V	PE				
	C96	59.34.4222	220 pF	5%	20,	CE				
	C • • • • 97	59.05.0682	6.8 nF		50V					
	C • • • • 98	59.34.4221	220 pF	5%	- / •	CE				
	C•••99	59.06.0682	6.8 nF		50 V					
	C • • • 100	59.34.4221	220 pF	5%		CE				
	C • • • 101		not used							
	C • • • 102		not used							
	C • • • 103	59.22.4101	100 uF	-20%	16V	EL				
	C • • • 104	59.34.4221	220 pF	5%		CE				
	C•••105		680 pF	1%	500V	PP	59051681	option	. 1	
	C • • • 106		680 pF	1%	500V	PP	59051681	option		
	C • • • 107	59.06.0223	22 nF	10%	50V	ΡĒ	272.001	0,00.01	•	
	C • • • 108	59.06.0223	22 nF	10%	50V	PE				
S T U	D E R (03	3) 84/10/04 TA	MONO-INF	OUT-UNIT	-B-4CH/	8CH	1.912.12	0.00 P	AGE	

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C•••109		not used		_
	C • • • 110		not used		
	C • • • 111		not used		
	01	50.04.0125	1N4448		any
	D••••2	50.04.0125	1N4448		any
	D••••3	50.04.0125	1N4448		any
	D4	50.04.0125	1N4448		any
	D••••5		not used		,
	D••••6	50.04.0125	1N4448		any
	D • • • • 7	50.04.1112	Z 5.1V	400mW BZX83C 5.1, BZX55C 5.	
	08	50.04.0125	1N4448		any
	D••••9	50.04.0125	1N4448		aný
	D10	50.04.0125	1N4448		any
	011	50.04.0125	1N4448		an y
	D•••12	50.04.0125	1N4448		any
	D••••13	50.04.0125	* 1N4448		any
	D••••14	50.04.0125	1N4448		any
	D••••15	50.04.0125	1N4448		any
	016	50.04.0125	* 1N4448		any
	D•••17	50.04.0125	1N4448		an ý
	018	50.04.0125	* 1N4448		aný
	D19	50.04.0125	* 1N4448		aný
	D20	50.04.0125	1N4448		an y
	D21	50.04.0125	1N4448		any
	D22	50.04.0125	1N4448		any
	023	50.04.0125	1N4448		any
	024	50.04.0125	1N4448		an y
	DL • • • • 1	50.04.2111	MV5753	red	GI, HP
	DL•••2	50.04.2111	MV5753	red	GI,HP
	IC • • • • 1	50.05.0244	NE5534NB	single op. amp. low noise	Sig, Ra
	IC2	50.09.0106	NE5532AN	dual op. amp. low noise	Sig, Ex, Ra
	IC3	50.09.0106	NE5532AN	dual op. amp. low noise	Sig, Ex, Ra
	IC • • • 4	50.09.0103	TL 071	single op. amp.	TI
	IC5	50.09.0105	NE5532	dual op. amp.	Sig,Ex,Ra
S T U	D E R (0	03) 84/10/04 TA	MONO-INP	UT-UNIT-B-4CH/3CH 1.912.120.00	PAGE 4

MANUF	/ EQUIVALENT	SPECIFICATIONS ,	VALUE	PART NO.	POS.NO.	IND.
TI,Siq,Ra		single op• amp•	NE5534N	50.05.0243	IC•••6	
Fc,Mot,RCA	e CMOS	2 input and-gate	CD4081	50.07.0081	IC7	
Fc, Mot	CMOS	hex. inverter	CD4049	50.07.0049	IC ••••8	
Ra, NEC		dual op.amp.	RC4559	50.09.0107	IC9	
Ra, NEC		dual op. amp.	RC 4559	50.09.0107	IC10	
Sig, Mot, NSC		timer	NE 555	50.05.0158	IC • • • 11	
Sig, Ex, Ra		dual op• amp•	NE5532	50.09.0105	IC12	
TI,Sig,Ra		single op. amp.	NE5534N	50.05.0243	IC13	
TI,Siq,Ra		single op. amp.	NE5534N	50.05.0243	IC14	
TI,Sig,Ra		single op. amp.	NE5534N	50.05.0243	IC • • • 15	
TI,Sig,Ra		single op. amp.	NE5534N	50.05.0243	IC16	
TI,Sig,Ra		single op. amp.	NE5534N	50.05.0243	IC17	
St		hf-sym.choke		1.022.207.00	L1	
Bu		euroconnector	2#8 pin	54.11.2007	P • • • • 3	
Bu		euroconnector	2*16pin	54.01.0359	P • • • • 4	
Bu		euroconnector	2*16pin	54.01.0359	P••••6	
NS,Mot,Six		N-JFET	J 112	50.03.0350	Q • • • • 1	
NS, Mot, Six		N-JFET	J 112	50.03.0350	Q • • • • 2	
NS, Mot, Six		N-JFET	J 112	50.03.0350	Q••••3	
NS, Mot, Six		N-JFET	J 112	50.03.0350	Q 4	
NS,Mot,Six		N-JFET	J 112	50.03.0350	Q • • • • 5	
NS, Mot, Six		N-JFET	J 112	50.03.0350	Q • • • • 6	
NS, Mot, Six		N-JFET	J 112	50.03.0350	Q7	
any	B>100	NPN IC>100mA.	BC 237	50.03.0436	Q • • • • 8	
NS, Mot, Six		N-JFET	J 112	50.03.0350	Q • • • • 9	
NS, Mot, Six		N-JFET	J 112	50.03.0350	Q10	
NS, Mot, Six		N-JFET	J 112	50.03.0350	Q • • • • 11	
NS, Mot, Six		N-JFET	J 112	50.03.0350	Q • • • • 12	
NS, Mot, Six		N-JFET	J 112	50.03.0350	Q13	
NS, Mot, Six		N-JFET	J 112	50.03.0350	Q••••14	
NS, Mot, Six		N-JFET	J 112	50.03.0350	Q••••15	
NS, Mot, Six		N-JFET	J 112	50.03.0350	Q16	
NS, Mot, Six		N-JFET		50.03.0350	Q17	
NS, Mot, Six		N-JFET	* J 112	50.03.0350	Q18	

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS /	EQUIVALENT	MANUF.
	Q••••19	50.03.0350	* J 112	N-JFET	NS•M	lot,Six
	Q2U	50.03.0350	* J 112	N-JFET		lot, Six
	Q21	50.03.0350	* J 112	N-JFET	NS,M	lot,Six
	Q22	50.03.0350	* J 112	N-JFET	NS, M	lot,Six
	Q • • • • 23	50.03.0350	* J 112	N-JFET	NS • M	lot,Six
	Q24	50.03.0350	* J 112	N-JFET	NS, M	lot,Six
	Q • • • • 25	50.03.0350	J 112	N-JFET	NS , M	lot,Six
	U ••••26	50.03.0350	J 112	N-JFET	NS • M	lot,Six
	Q27	50.03.0350	J 112	N-JFET	NS • M	ot,Six
	Q • • • • 28	50.03.0350	J 112	N-JFET		lot,Six
	Q • • • • 29	50.03.0350	J 112	N-JFET	NS, M	ot, Six
	Q30	50.03.0350	J 112	N-JFET	NS • M	ot,Six
	R••••1	57.11.3103	10 kOhm	1% 0.25W MF		
	R • • • • 2	57.11.3103	10 kOhm	1% 0.25W MF		
	R••••3	57.11.3432	4•3 kOhm	1% 0.25W MF		
	R • • • • 4	57.11.3432	4•3 kOhm	1% 0.25W MF		
	R • • • • 5	57.11.4152	1.5 kOhm	5% 0•25W MF		
	R••••6	57.11.4223	22 kOhm	5% 0.25W MF		
	K••••7	57.11.4330	33 Ohm	5% 0.25W MF		
	R8	57.11.4104	100 kOhm	5% 0.25W MF		
	R • • • • 9	57.11.4223	22 kOhm	5% 0.25W MF		
	R••••10	57.11.3152	l∙5 kOhm	1% 0.25W MF		
	R••••11	57.11.3162	l•ó kOhm	1% 0.25W MF		
	R12	57.11.3123	12 kOhm	1% 0.25W MF		
	R••••13	57.11.3561	560 Ohm	1% 0.25W MF		
	R••••14	57.11.3362	3.6 kOhm	1% 0.25W MF		
	R••••15	57.11.3153	15 kOhm	1% 0.25W MF		
	R16		not used			
	R••••17	57.11.3331	330 Ohm	1% 0.25W MF		
	R••••18	57.11.3470	47 Ohm	1% 0.25W MF		
	R••••19	57.11.4104	100 kOhm	5% 0.25W MF		
	R • • • • 20	57.11.4472	4.7 kOhm	5% 0.25W MF		
	R••••21	57.11.4471	470 Ohm	5% 0.25W MF		
	R••••22	57.11.4101	100 Ohin	5% 0.25W MF		
	R••••23 R••••24	1.010.002.58 57.11.4332	10 kOhm	20% pos. log.	variable resistor	St
	K • • • • 2 4	21.11.4332	3.3 kOhm	5% 0•25₩ .CF		
STU	D E R (0	03) 84/10/04 TA	MONO-INP	JT-UNIT-B-4CH/8CH	1.912.120.00 P.	AGE 6

MANU			EQUIVALENT	NS /	FICATIO	SPECI	VALUE		PART NO.	POS.NO.	IND.
				CF	0.25W	5%	kOhm	3.3	57.11.4332	R••••25	
				CF	0.25W	5%	Ohm	33	57.11.4330	R26	
				MF	0.25W	1%	kOhm	1.5	57.11.3152	R27	
				MF	0.25W	12	kOhm	1.5	57.11.3152	R28	
				MF	0.25W	1%	kOhm	3.9	57.11.3392	R • • • • 29	
				MF	0.25W	1%	kOhm	3.9	57.11.3392	R • • • • 30	
				MF	0.25W	5%	kOhm	3.9	57.11.3392	R31	
				MF	0.25W	5%	Ohm	100	57.11.4101	R••••32	
				MF	0.25W	1%	kOhm	4.7	57.11.3472	R33	
				MF	0.25W	1%	kOhm	4.3	57.11.3432	R34	
						10%	kOhm	5	58.01.8502	R • • • • 35	
				MF	0.25W	5%	kOhm	1.8	57.11.4182	R••••36	
				MF	0-25W	5%	kOhm	4.7	57.11.4472	R37	
				MF	0.25W	5%	kOhm	1.3	57.11.3132	R38	
S	-	resisto	variable		lin.	20%	kOhm	10	1.010.001.58	R••••39	
				MF	0.25W	5%	kOhm	4•7	57.11.4472	R • • • • 40	
				MF	0.25W	5%	kOhm	1.3	57.11.3132	R41	
				MF	0.25W	5%	kOhm	33	57.11.4333	R • • • • 42	
				CF	0.25W	1%	kOhm	4.7	57.11.3472	R • • • • 43	
				CF	0.25W	1%	k0hm	4.7	57.11.3472	R • • • • 44	
				CF	0.25W	1%	kOhm	47	57.11.3473	R • • • • 45	
				CF	0.25W	1%	kOhm	47	57.11.3473	R • • • • 46	
				CF	0.25W	5%	kOhm	33	57.11.4333	R • • • • 47	
9100	662	Nr • 2322	Philips	PTC			Ohm	5.6	57.99.0209	R•••48	
9100	662	Nr • 2322	Philips	PTC			Ohm	5.6	57.99.0209	R • • • • 49	
9100	662	Nr.2322	Philips	PTC			Ohm	5.6	57.99.0209	R••••50	
9100	660	Nr • 2322	Philips	PTC			Ohm	50	57.99.0206	R••••51	
			•	CF	0.25W	5%	kOhm	6.8	57.11.4682	R•••52	
				CF	Ù•25₩	5%	kOhm	100	57.11.4104	R••••53	
				CF	0.25W	5%	kOhm	100	57.11.4104	R • • • • 54	
				CF	0.25W	5%	kOnm	100	57.11.4104	R••••55	
				CF	0.25W	lû%	MOhm		57.11.6106	R••••56	
				CF	0.25W	5%	k0hm	6.8	57.11.4682	R•••57	
				CF	0.25W	5%	kOhm		57.11.4332	R • • • • 58	
				CF	0.25W	5%	k0hm		57.11.4332	R • • • • 59	
				CF	0.25W	5%	k0hm		57.11.4682	R60	
				CF	0.25W	10%	MOhm	10	57.11.6106	R61	

MANUF.	NS / EQUIVALENT	IFICATIO	SPEC	VALUE		PART NO.	POS.NO.	IND.
	CF		5.%	MOhm		57.11.4105	R•••62	
	CF		5%	kOhm		57.11.4333	R•••63	
	CF		5%	kOhm		57.11.4682	R64	
	CF		5%	MOhm		57.11.4335	R • • • • 65	
	CF		5%	kOhm		57.11.4104	R•••66	
	CF	U.25W	5%	kOhm		57.11.4104	R•••67	
	CF	0.25W	5%	kOhm		57.11.4104	R•••68	
	CF	0.25W	5%	kOhm	10	57.11.4103	R69	
	CF	0.25	1%	kOhm	2	57.11.3202	R••••70	
	CF	0.25W	5%	MOhm	3.3	57.11.4335	R••••71	
	CF	0.25W	5%	kOhm	100	57.11.4104	R72	
	CF	0.25W	5%	kOhm	100	57.11.4104	ƙ••••73	
	CF	0.25W	5%	kOhm	100	57.11.4104	R74	
	CF	0.25W	5%	kOhm		57.11.4103	R75	
	CF	0.25W	5%	kOhm	100	57.11.4104	R76	
	CF	0.25W	5%	kOhm		57.11.4223	R • • • • 77	
	CF	U • 25W	5%	kOhm		57.11.4332	R78	
	ČF	0.25W	5%	kOhm		57.11.4104	R • • • • 79	
	CF	0.25W	5%	kOhm	100	57.11.4104	R•••80	
	CF	0.25W	5%	kChm		57.11.4224	R81	
	CF	0.25W	5%	kOhm		57.11.4332	R • • • 82	
	CF	U-25W	5%	k Ohm		57.11.4104	R83	
	CF	0.25W	1%	k0hm		57.11.3102	R • • • 84	
	CF	0.25W	1%	kOhm		57.11.3473	R • • • 85	
	CF	Ů • 25W	1%	kOhm		57.11.3822	R86	
	CF	0.25W	5%	kOhm		57.11.4104	R • • • • 87	
	CF	0.25W	5%	Ohm	33	57.11.433C	R 88	
	CF	0.25W	5%	kOhm	22	57.11.4223	R89	
	CF	0.25W	5%	kOhm		57.11.4104	R • • • • 90	
	CF	0.25W	5%	kOhm		57.11.4104	R••••91	
	CF	0.25H	5%	Ohm	330	57.11.4331	R 92	
	CF	0.25N	5%	kOhm		57.11.4102	R • • • • 93	
	CF	0 • 25W	10%	MOhm		57.11.6106	R94	
	CF	0.25W	5%	kOhm		57.11.4104	R 95	
	CF	0.25W	5%	kOhm		57.11.4333	R • • • 96	
	CF	0.25W	5%	Ohm	120	57.11.4121	R••••97	
St	variable resistor	lin.	20%	kOhm		1.010.003.58	R • • • 98	

IND.	POS.NO.	PART NO.	VALUE	SPECI	FICATIONS / EQU	IVALENT	MANUF.
	R••••99	57.11.4121	120 Ohm	5%	0.25W CF		
	R100	57.11.4103	10 kOhm	5%	0.25W CF		
	R101	57.11.4103	10 kOhm	5%	0.25W CF		
	R102	57.11.3682	6∙8 kOhm	1%	0.25W CF		
	R103	57.11.3562	5.6 kOhm	1%	0.25W CF		
	R104	57.11.4104	100 kOhm	5%	0.25W CF		
	R105	57.11.4684	680 kOhm	5%	0.25W CF		
	R106	57.11.3392	3.9 kOhm	1%	0.25W CF		
	R107		100 kOhm	10%	neg.log.variab	le resistor,	see R98 St
	R108	57.11.4561	560 Ohm	5%	0.25W CF		
	R109	1.010.005.58	4.7 kOhm	20%		le resistor	St
	R110	57.11.4561	560 Ohm	5%	0.25W CF		
	R111	57.11.4103	10 kOhm	5%	0.25W CF		
	R112	57.11.4103	1J kOhm	5%	Ú.25₩ CF		
	R113	57.11.4105	1 MOhm	5%	0.25W CF		
	R•••114	57.11.4105	1 MOhm	5%	0.254 CF		
	R115	57.11.3472	4.7 kOhm	1%	ە25W CF		
	R116		100 kOhm	10%	neg.log.variab		
	R117		100 kOhm	10%	neg.log.variab	le resistor,	see R109 St
	R•••118	57.11.3512	5•1 kOhm	1%	0.25W CF		
	R119	57.11.4103	10 kOhm	5%	0.25W CF		
	R120	57.11.4335	3.3 MOhm	5%	0.25W CF		
	R121	57.11.4103	10 kOhm	5%	0.25W CF		
	ƙ122	57.11.4331	330 Ohm	5%	0.25W CF		
	R123	57.11.4103	10 k0hm	5%	0.25W CF		
	R124	57.11.4103	10 kOhm	5%	0.25W CF		
	R125	57.11.4121	120 Ohm	5%	0.25W CF		
	R•••126	1.010.003.58	4•7 kOhm	20%		le resistor	St
	R127	57.11.4121	120 Ohm	5%	0.25W CF		
	R•••128	57.11.3682	6∙ð kOhm	1%	0.25W CF		
	R•••129	57.11.3562	5∙6 kOhm	1%	0.25W CF		
	K130	57•11•41û4	100 kOhm	5%	0.25W CF		
	R131	57.11.4103	10 kOhm	5%	0.25W CF		
	R132	57.11.4684	680 kOhm	5%	ܕ25W CF		
	R133	5711.4103	10 kOhm	5%	0.25W CF		
	R•••134	57.11.3472	4.7 kOhm	1%	0.25W CF		
	R135	57.11.4223	22 kOhm	5%	0.25W CF		
s T U	DER	(ú3) 84/10/04 TA	MONO-INPL	ΤΙΝ Ό-Τ	-B-4CH/8CH	1.912.120.00	D PAGE 9

IND.	POS.NO.	PART NO.	VALUE	SPECI	FICATIONS / EQUIV	ALENT	MAM	NUF.
								٠.
	R136		100 kOhm	10%	neg.log.variable	resistor, s	ee R126	St
	R137	57.11.4223	22 kOhm	5%	0.25W CF			
	R•••138	57.11.4182	1.8 kOhm	5%	0.25W CF			
	R•••139	57.11.4330	33 Ohm	5%	0.25W CF			
	R•••140	57.11.3103	10 kOhm	1%	0.25W CF			
	R•••141	57.11.4102	1 kOhm	5%	0.25W CF			
	R•••142	57.11.4471	470 Ohm	5%	0.25W CF			
	R•••143	57.11.4332	3.3 kOhm	5%	0.25W CF			
	R • • • 144	57.11.4332	3.3 kOhm	5% 5%	0.25W CF 0.25W CF			
	R•••145	57.11.4332 1.010.004.58	3∙3 kOhm 10 kOhm			rocistor		St
	R•••146	1.010.004.56	10 kOhm	10% 10%	pos.log.variable			
	R•••147 R•••148	57.11.4332	3.3 kOhm	5%	neg.log.variable 0.25W CF	resistor, s	66 KI40	3.0
	R149	57.11.4332	3.3 kOhm	5% 5%	0.25W CF			
	R150	57.11.4332	3.3 kOhm	5%	0.25W CF			
	R151	57.11.4333	33 kOhm	5%	0.25W CF			
	R152	57.11.4333	33 kOhm	5%	0.25W CF			
	R153	57.11.4332	3.3 kOhm	5%	0.25W CF			
	R154	57.11.4332	3.3 kOhm	5%	0.25W CF			
	R155	57.11.4333	33 kOhm	5%	0.25W CF			
	R156	57.11.4332	3.3 kOhm	5%	0.25W CF			
	R157	57.11.4332	3•3 kOhm	5%	Û•25W CF			
	R • • • 158	57.11.4471	470 Ohm	5%	0.25W CF			
	R•••159	57.11.4333	33 kOhm	5%	0.25W CF			
	R160	1.369.150.03	10 kOhm	20%	pos.log.variable	resistor		St
	R161	57.11.4332	3.3 kOhm	5%	0.25W CF			
	R•••162	1.369.150.03	10 kOhm	20%	pos.log.variable	resistor		St
	R163	57.11.4332	3.3 kOhm	5%	0.25W CF	, 00, 500,		•
	R•••164		10 kOhm	20%	pos.log.variable	resistor		St
	R • • • 165	57.11.4332	3.3 kOhm	5%	0.25W CF	, 03, 300,		٥,٠
	R166	1.010.006.58	4.7 kOhm	20%		resistor		St
	R167	1.010.000000	10 kOhm	20%	neg.log.variable		ee R166	
	R • • • 168	57.11.4332	3.3 kOhm	5%	0.25W CF	103130017 3	CC 11200	3.0
	R169	2	10 kOhm	20%	pos.log.variable	resistor. s	ee R166	St
	R•••170	57.11.4332	3.3 kOhm	5%	0.25W CF			
	R•••171	57.11.4332	3.3 kOhm	5%	0.25W CF			
	R172	57.11.4104	100 kOhm	5%	0.25W CF			
s T U	DER (03) 84/10/04 TA	MONO-INPU	JT-UNIT	-B-4CH/8CH	1.912.120.00	PAGE	10

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	R•••173	57.11.4104	100 kOhm	5% 0•25₩ CF	
	R174	57.11.4104	100 kOhm	5% û•25₩ CF	
	R175	57.11.4104	100 kOhm	5% 0•25₩ CF	
	R176	57.11.4332	3.3 kOhm	5% 0•25W CF	
	R177	57.11.4104	100 kOhm	5% 0•25₩ CF	
	R178	57.11.4104	100 kOhm	5% 0•25₩ CF	
	R179	57.11.4104	100 kOhm	5% 0•25₩ CF	
	R180	57.11.4104	100 kOhm	5% 0.25W CF	
	R181	57.11.4332	3.3 kOhm	5% 0•25₩ CF	
	K182	57.11.4104	100 kOhm	5% 0•25₩ CF	
	R183	57.11.4104	10ú kOhm	5% 0.25₩ CF	
	R184	57.11.4104	100 kOhm	5% 0•25₩ CF	
	R185	57.11.4104	100 kOhm	5% 0.25W CF	
	R186	57.11.4332	3•3 kOhm	5% ú•25₩ CF	
	R187	57.11.4104	100 kOhm	5% 0.25W CF	
	R188	57.11.4104	100 kOhm	5% 0.25₩ CF	
	R189	57-11-4104	100 kOhm	5% 0.25W CF	
	R•••190	57.11.4104	10ù kOhm	5% 0•25₩ CF	
	R•••191	57.11.4332	*3.3 kOhm	5% 0.25W CF	
	R192	57.11.4104	≉100 kOhm	5% 0•25W CF	
	R193	57.11.4104	≉100 kOhm	5% 0.25W CF	
	R194	57.11.4104	*100 kOhm	5% 0.25W CF	
	R195	57.11.4104	⊅100 kOhm	5% 0.25W CF	
	R196	57.11.4332	≈3.3 kOhm	5% 0.25W CF	
	R197	57.11.4104	≄i00 kOhm	5% 0•25W CF	
	R198	57.11.4104	⊅100 kOhm	5% 0•25W CF	
	R199	57.11.4104	*100 kOhm	5% Û•25W CF	
	R200	57.11.4104	≉10∪ kOhm	5% 0∙25W CF	
	R • • • 201	57.11.4332	∻3∙3 kOhm	5% 0•25W CF	
	R202	57.11.4104	*100 kOhm	5% 0•25₩ CF	
	R•••203	57.11.4104	⊅100 kOhm	5% 0•25₩ CF	
	K • • • 204	57.11.4104	≉100 kOhm	5% 0.25W CF	
	R205	57.11.4104	≄i0ù k0hm	5% 0•25₩ CF	
	R206	57.11.4332	#3.3 kOhm	5% 0•25₩ CF	
	R • • • 207	57.11.4104	≑100 kOhm	5% 0∙25W CF	
	R 208	57.11.4104	≉i00 kDhm	5% 0.25W CF	
	R209	57.11.4104	≉100 kOhm	5% 0.25W CF	
STU	D E R (03	3) 84/10/04 TA	MO:10-INP	UT-UNIT-B-4CH/8CH 1.912.120	0.00 PAGE 11

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	R•••210	57.11.4104	*100 kOhm	5% 0•25W CF	
	R211	57.11.4103	10 kOhm	5% 0.25W CF	
	R212	57.11.4104	100 kOhm	5% 0•25W CF	
	R213	57.11.4104	100 kOhm	5% 0.25W CF	
	R214	57.11.4103	10 kOhm	5% 0.25₩ CF	
	R215	57.11.4104	100 kOhm	5% 0.25₩ CF	
	R216	57.11.4104	100 kOhm	5% 0.25W CF	
	R217	57.11.4104	100 kOhm	5% 0.25W CF	
	R213	57.11.4103	10 kOhm	5% 0.25W CF	
	R219	57.11.4104	100 kOhm	5% 0.25W CF	
	R • • • 220	57.11.4104	100 kOhm	5% 0.25W CF	
	R221	57.11.4103	10 kOhm	5% 0.25₩ CF	
	R222	57.11.4104	100 kOhm	5% G.25W CF	
	R•••223	57.11.4104	100 kOhm	5% 0.25W CF	
	R224	57.11.4104	iOO kOhm	5% 0.25W CF	
	R225	57.11.4223	22 kOhm	5% 0.25₩ CF	
	R226		i.5 kOhm	1% 0.25W MF 57113152 option	1
	R•••ZZ7		3.9 kOhm	1% 0.25W MF 57113392 option	
	R228		3.9 kOhm	1% 0.25W MF 57113392 option	
	R229		1.5 kOhm	1% 0.25W MF 57113152 option	
	\$3	55.15.0002	2≉∪	button: 55030304 yellov	•
	54	1.912.120.03	2∻U	·	
	S • • • • • 5		2≄U	see \$4	
	S 6		2*U	see \$4	
	S7	55.15.0002	2≄U	button: 55030305 green	
	8 • • • • 8	55.15.0003	2 *U	2u gold button: 55030310 white	
	S9	55.15.0012	2≑U	button: 55150106 red	ITT
	S10	55.15.0003	2#U	2U gold button: 55030303 red	I T,T
	S11	55.15.0003	2 #U	2U gold button: 55030303 red	ITT
	S13	1.369.150.03	1*∪	combined with variable resistor R 160	St
	514	1.369.150.03	1*∪	combined with variable resistor R 162	St
	S15	1.369.150.03	1*U	combined with variable resistor R 164	St
	S•••16	1.010.006.59	1*∪	combined with variable resistor R 166	St
02)	S • • • • 17	55.15.0002	* 2*U	button: 55030303 red	ITT
02)	S18	55.15.0002	≯ 2 ¥ U	button: 55030303 red	ITT
	S19	55.15.0002	2 * U	button: 55030303 red	ITT
ΤU	D E R (0	03) 84/10/04 TA	MONO-INP	UT-UNIT-8-4CH/8CH 1.912.120.00 P	AGE 12

IND.	PUS.NO.	PART NO.		VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(02)	S20 S21	55.15.0002 55.15.0002		2*U 2*U	button: 55030303 re button: 55030303 re	
(02)	S • • • • 22 S • • • • 23	55•15•0002 55•15•0002	*:	2#U 2#U	button: 55030303 red button: 55030303 red	
	S • • • 24	55.15.3002	**	2*U	button: 55030303 red	d ITT
	T1 T2	1.022.417.00 1.022.451.00 1.128.072.01 1.128.072.01		9-wire	input trafo 1:3.14 input trafo 1:0.62 flatcable	St St
	W 4 W 5 W 6	1.120.072.31	** *** ***	9-wire	flatcaple	
	XDL···1 XDL···2	1.010.012.50 1.010.012.50			LED-holder LED-holder	St St

S T U D E R (03) 84/10/04 TA MONO-INPUT-UNIT-8-4CH/3CH 1.912.120.00 PAGE 13

IND. POS.NO. PART NO. VALUE SPECIFICATIONS / EQUIVALENT MANUF.

→ ONLY 8-CHANNEL 1.912.122.00

** ONLY 4-CHANNEL

01 83/12/16 elimination of phase-switching noise

02 84/02/08 S17 S18 only 8CH 1.912.122.00

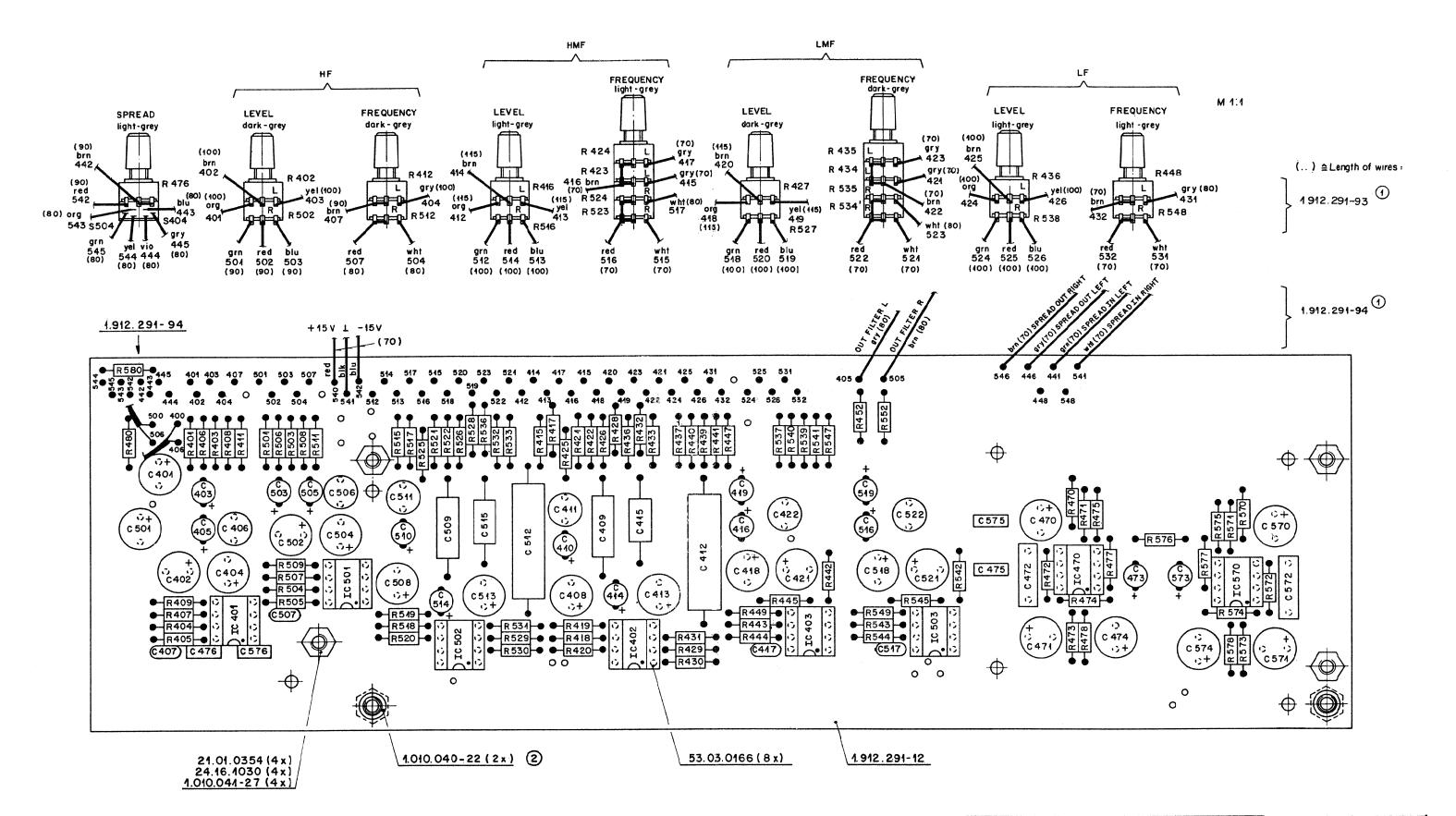
03 84/10/04 suppression of high frequency

option 1: tape-input replaces gen-input

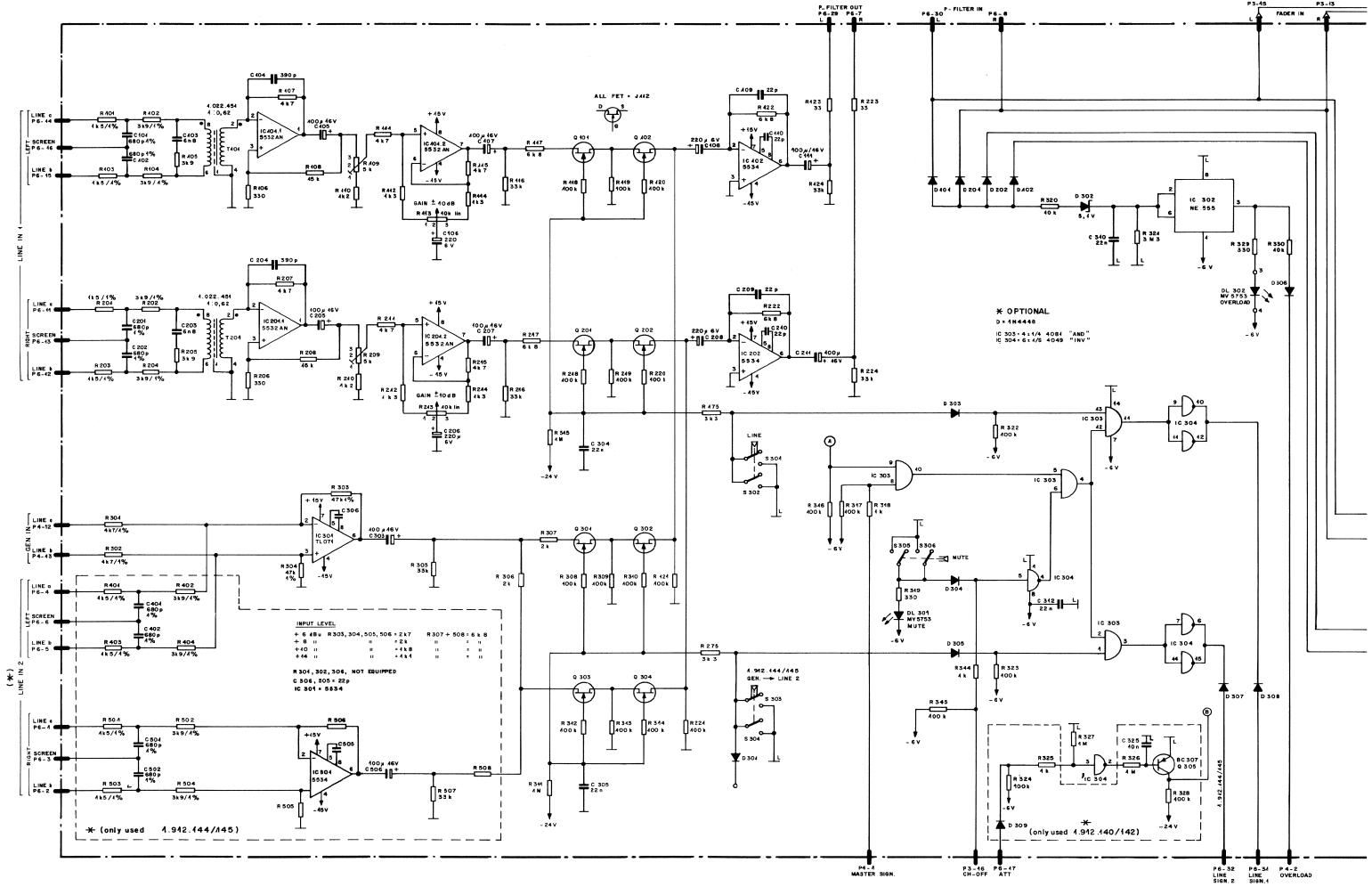
CE=Ceramic, CF=Carbon Film, EL=Electrolytic, MF=Metal Film, PE=Polyester, PP=Polypropylen, PS=Polystyrol

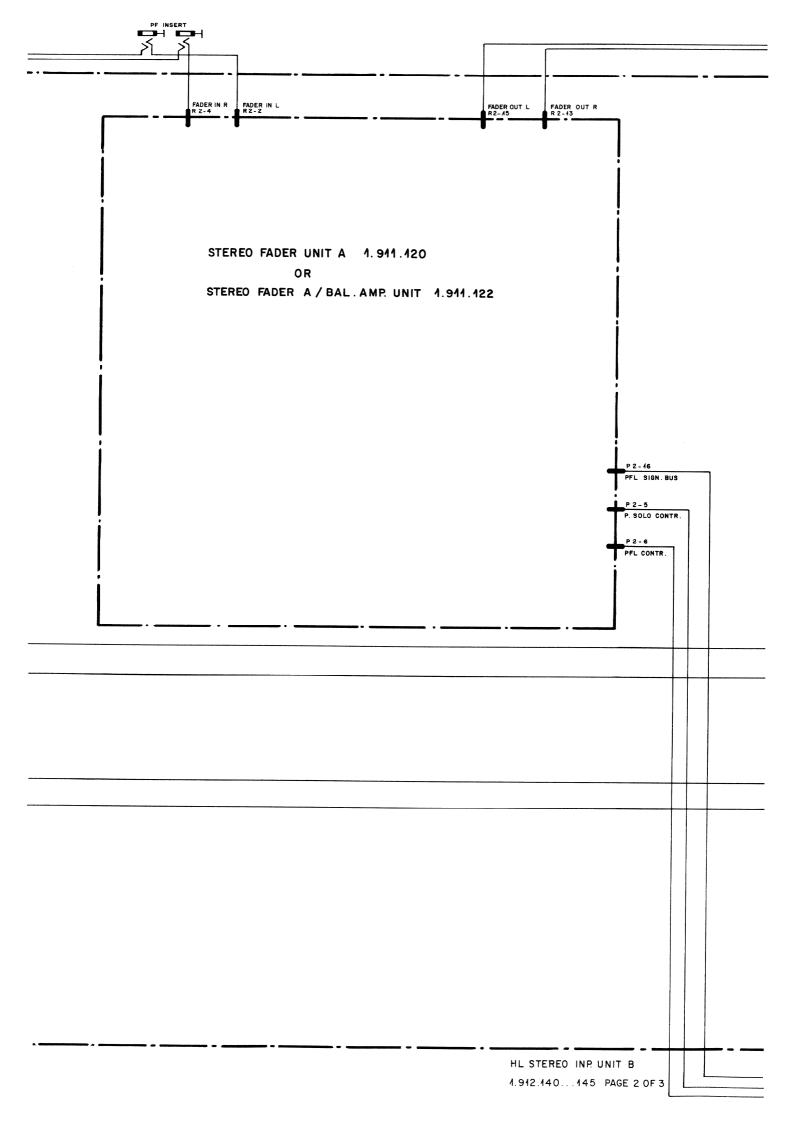
MANUFACTURER: Bu=Burndy, Ex=Exar, Fc=Fairchild, GI=General Instrument HP=Hewlett Packard, ITT=Intermetall, Mot=Motorola, NS=National Semiconductors, Ph=Philips, Ra=Raytheon, Sig=Signetics, Six=Siliconix, St=Studer,

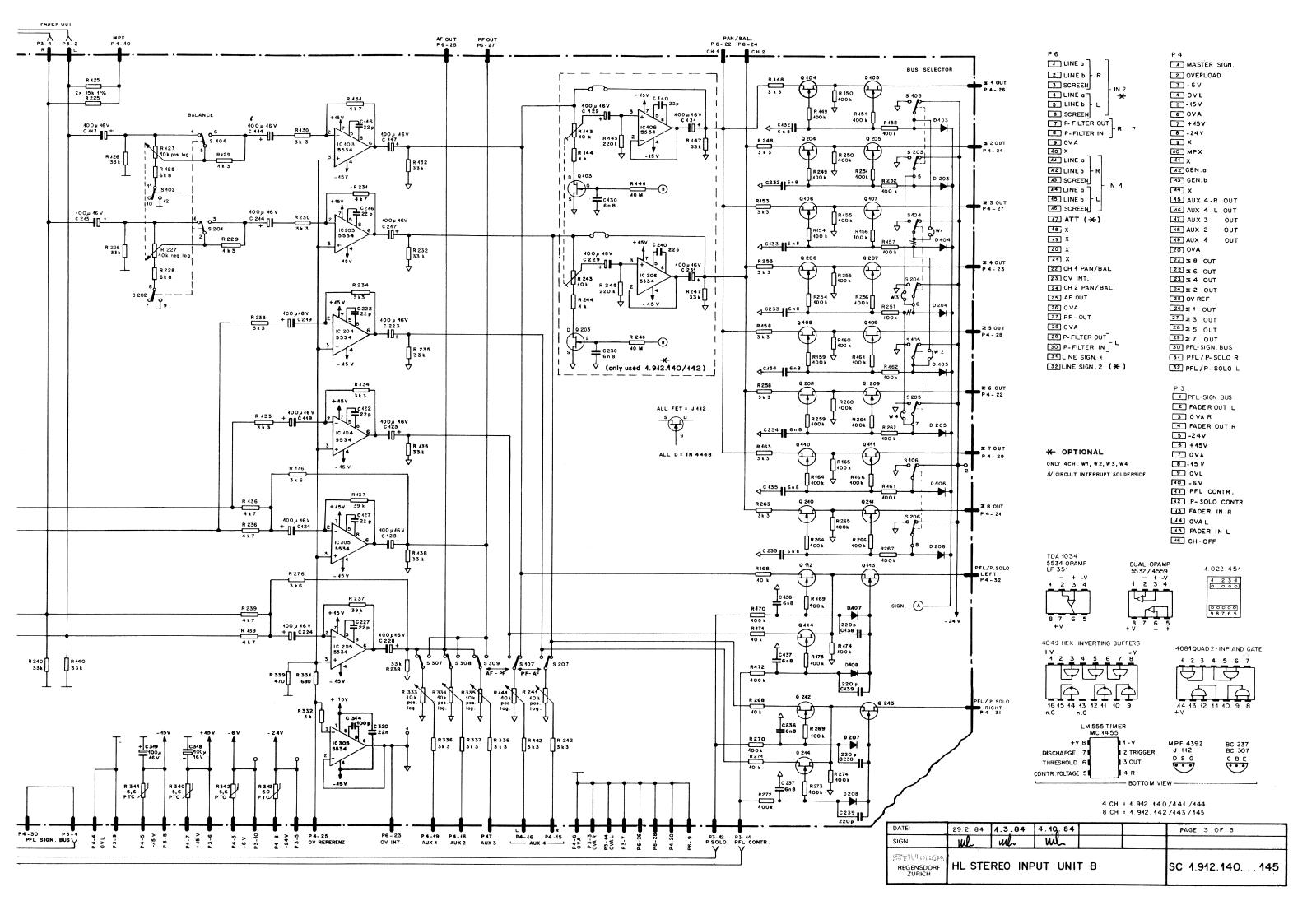
TI=Texas Instrument

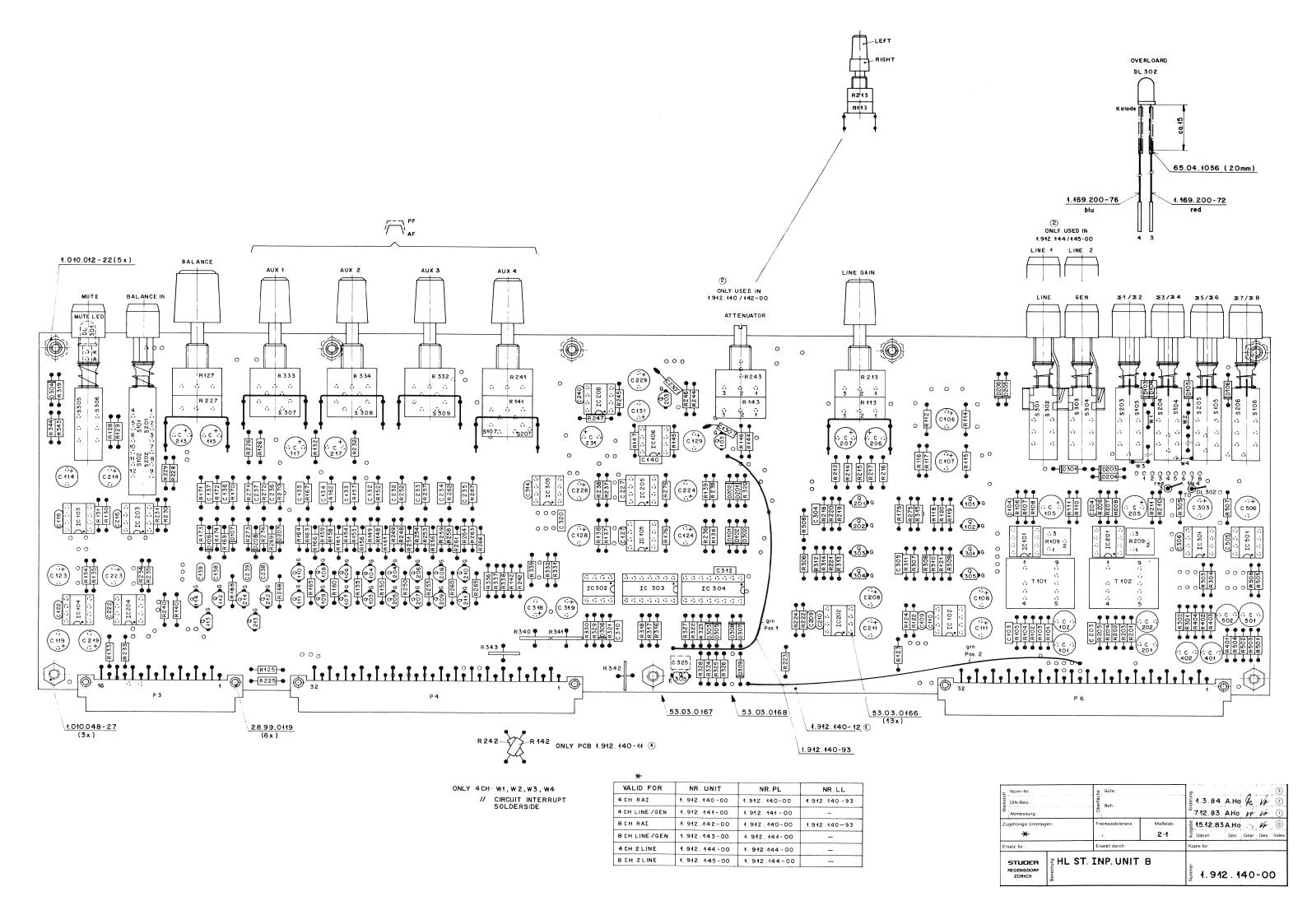


¥	Norm-Nr.:		p Güte·		g				-		(3)
Werkstoff	DIN-Bez.:		Bey:		deru	12.9.	35	A.Ho	ml	wh	2
š	Abmessung:		Ö		Ā	22.5.	34	STJ	Vo	Vo	①
Zu	gehörige Unterlage	en:	Freimasstoleranz	Maßstab:	appe	8.9.8	3	A.Ho	W	ae	0
Ρl	-			1:1; 2:1	Ausg	Datum		Gez.	Gepr.	Ges.	Index
Ers	satz für:		Ersetzt durch:		Ко	pie für:					
STUDER REGENSDORF ZÜRICH			er Boar	d	Nummer:	1.91	2	.29) 1-	00)









IND.	POS.NO.	PART NO.	VALUE	SPECI	FICATIO	ONS / EC	UIVALENT		MANI	JF.
	C•••101	59.05.1681	680 pF	1%	500V	PP				
	C102	59.05.1681	680 pF	1 %	500V	PP				
(03)	C•••103	59.06.0682	6,8 nF	10%	50V	PΕ				
	C • • • 104	59.34.5391	390 pF	5%		CE				
	C • • • 105	59.22.4101	100 uF	-20%	167	EL				
	C • • • 106	59.22.2221	220 uF	-20%	6 V	EL				
	C • • • 107	59.22.4101	100 uF	-20%	167	EL				
	C • • • 108	59.22.2221	220 uF	- 20%	6 V	EL				
	C • • • 109	59.34.2220	22 pF	5%		CE				
	C • • • 110	59.34.2220	22 pF	5%		CE				
	C•••111	59.22.4101	100 uF	- 2J%	16V	EL				
	C • • • 112		not exist							
	C•••113	59.22.4101	100 uF	-20%	16V	EL				
	C•••114	59.22.4101	100 uF	- 20%	16V	EL				
	C•••115		not used							
	C•••116	59.34.2220	22 pF	5%		CE				
	C • • • 117	59.22.4101	100 uF	-20%	16V	EL				
	C • • • 118		not exist							
	C•••119	59.22.4101	100 uF	-20%	16V	EL				
	C•••120		not exist							
	C • • • 121		not used							
	C•••122	59.34.2220	22 pF	5%		CE				
	C•••123	59.22.4101	100 uF	-20%	16V	EL				
	C • • • 124	59.22.4101	100 uF	-20%	16V	EL				
	C•••125		not exist							
	C•••126		not used							
		59.34.2220	22 pF	5%		CE				
	C•••128	59.22.4101	100 uF	-20%	16V	EL				
(01)	C•••129		not used							
(01)	C • • • 130		not used							
(01)	C•••131		not used							
	C•••132	59.06.0682	6•8 nF		50V	ΡE				
	C133	59.06.0682	6•8 nF		50V	ΡE				
	C•••134	59.06.0682	* 6∙8 nF		50 V	PΕ				
	C•••135	59.06.0682	* 6•8 uF		50V	PE				
		59.06.0682	6•8 nF		50 V	PΕ				
	C•••137	59.06.0682	6•8 nF		50 V	PE				
S T U	D E R (03	6) 84/12/01 TA	HL-ST-IN	PUT-UNIT	Г-В-4СН	/8CH	1.912.141.	00 PA	AGE	1

IND.	POS.NO.	PART NO.	VALUE	SPECI	FICATIO	ONS / EG	QUIVALENT	MAM	IUF.
	C•••138	59.34.4221	220 pF	5%		CE			
	C • • • 139	59.34.4221		5%		CE			
(01)	C • • • 140		not used			0.2			
	C • • • 201	59.05.1681	680 pF	1%	500V	PP			
	C • • • 202	59.05.1681	680 pF	1%	500V	PP			
(03)	C • • • 2 0 3	59.06.0682	6,8 nF	10%	50V	PΕ			
	C • • • 204	59.34.5391	390 pF	5%		CE			
	C • • • 205	59.22.4101	100 uF	-20%	167	EL			
	C • • • 206	59.22.2221	220 uF	-20%	6 V	EL			
	C • • • 207	59.22.4101	100 uF	- 20%	167	EL			
	C • • • 208	59.22.2221	220 uF	-20%	6 V	EL			
	C • • • 209	59.34.2220	22 pF	5%		CE			
	C • • • 210	59.34.2220	22 pF	5%		CE			
	C • • • 211	59.22.4101	100 uF	-20%	16V	EL			
	C • • • 212		not exist						
	C • • • 213	59.22.4101	100 uF	-20%	16V	EL			
	C•••214	59.22.4101	100 uF	- 20%	167	EL			
	C•••215		not used						
	C•••216	59.34.2220	22 pF	5%		CE			
	C • • • 217	59.22.4101	100 uF	-20%	16V	EL			
	C • • • 218		not exist						
	C•••219	59.22.4101	100 uF	- 20%	16V	ΕL			
	C220		not exist						
	C • • • 221		not used						
	C • • • 222	59.34.2220	22 pF	5%		CE			
	C • • • 223	59.22.4101	100 uF	-20%	16V	EL			
	C • • • 224	59.22.4101	100 uF	-20%	16V	EL			
	C • • • 225		not exist						
	C 226		not used						
	C • • • 227	59.34.2220	22 pF	5%		CĒ			
	C • • • 2 2 3	59.22.4101	100 uF	-20%	167	- ز			
(01)	C • • • 229		not used						
(01)	C • • • 230		not used						
(01)	C • • • 231		not used						
	C • • • 232	59.06.0682	6.8 nF		50V	PΕ			
			6.8 nF		50 V	PΕ			
	C • • • 234	59.06.0682	* 6∙8 nF		50V	PΕ			
STU	D E R (03) 84/12/01 TA	HL-ST-IN	PUT-UNI1	Г-В-4CН	/8CH	1.912.141.00	PAGE	2

							QUIVALENT		luF.
	C•••235	59.06.0682	* 6•8 uF		50V	PE			
	C • • • 236	59.06.0682	6•8 nF		50V	PE			
	C • • • 237	59.06.0682	6•8 nF		50V	PΕ			
	C • • • 238	59.34.4221	220 pF	5%		CE			
	C • • • 239	59.34.4221	220 pF	5%		CE			
(01)	C • • • 240		not used						
	C • • • 301		not used						
	C • • • 302		not used						
	C • • • 303	59.22.4101	100 uF	-20%	16V	EL			
	C • • • 304	59.06.0223	22 nF	10%	50V	PE			
	C • • • 305	59.06.0223	22 nF	10%	50V	ΡĒ			
(01)	C • • • 306		not used		, •				
	C • • • 307		not used						
	C • • • 308		not used						
	C • • • 309		not used						
	C310	59.06.0223	22 nF	10%	50V	PΕ			
	C311		not used	10.0	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
	C • • • 312	59.06.0223	22 nF	10%	50V	PΕ			
	C313		not used						
(02)	C • • • 314	59.34.4101	100 pF	5%		CE			
	C315		not used			٠.			
	C•••316		not used						
	C • • • 317		not used						
	C • • • 318	59.22.4101	100 uF	-20%	16V	EL			
	C319	59.22.4101	100 uF	-20%	167	EL			
	C • • • 320	59.06.0223	22 nF	10%	50V	PΕ			
	C321		not used			-			
	C • • • 322		not used						
	C • • • 323		not used						
	C • • • 324		not used						
(01)	C • • • 325		not used						
(01)	C • • • 401		not used						
(01)	C • • • 402		not used						
(01)	C • • • 501		not used						
(01)	C • • • 502		not used						
	C • • • 503		not used						
	C • • • 504		not used						
c -									
STU	U E K (03) 84/12/01 TA	HL-ST-IN	PUT-UNIT	-B-4CH	/8CH	1.912.141.00	PAGE	3

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
(01)	C • • • 505 C • • • 506 C • • • 507		not used not used not used		
(O1) (O1)	0101 0102 D103 D104 D105 D106 D107 D108 D201 D202 D203 D204 D205 D206 D206 D301 D302 D303 D304 D305 D306 D307 D308 D309	50.04.0125 50.04.0125	1N4448 1N4448 1N4448 1N4448 * 1N4448 * 1N4448 1N4448 1N4448 1N4448 1N4448 * 1N4448 * 1N4448	400mW BZX83C 5.1, BZX55C 5.1,	any any any any any any any any any any
	DL • • 3 01 DL • • 3 02	50.04.2111 50.04.2111	MV5753 MV5753	red red	GI,HP GI,HP
	IC101 IC102 IC103 IC104	50.09.0106 50.05.0243 50.05.0243 50.05.0243	NE5532AN NE5534N NE5534N NE5534N	single op. amp. TI.	n,Ex,Ra Sig,Ra Sig,Ra Sig,Ra
STU	D E R (03)	84/12/01 TA	HL-ST-INP	UT-UNIT-B-4CH/8CH 1.912.141.00 F	AGE 4

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / FQU	IVALENT MANUF.
(01)	IC • • 105 IC • • 106	50.05.0243	NE5534N not used	single op. amp.	TI•Sig•Ra
(01)	IC201	50.09.0106	NE5532AN	dual op. amp. low	noise Sig•Ex•Ra
	IC202	50.05.0243	NE5534N	single op. amp.	TI,Siq,Ra
	IC••203	50.05.0243	NE5534N	single op. amp.	TI•Sig•Ra
	IC • • 204	50.05.0243	NE5534N	single op. amp.	TI,Ŝig,Ra
	IC205	50.05.0243	NE5534N	single op. amp.	TI,Sig,Ra
(01)	IC206		not used		5
(01)	IC301		not used		
	IC302	50.05.0158	NE 555	timer	Sig, Mot, NSC
	IC303	50.07.0081	CD4081	2 input and-gate CMO	
	IC • • 304	50.07.0049	CD4049	hex. inverter CMO	
	IC • • 305	50.05.0243	NE5534N	single op. amp.	TI,Sig,Ra
(01)	IC501		not used		
	P • • • • 3	54.11.2007	2*8 pin	euroconnector	<u>ម</u> ិប
	P • • • • 4	54.01.0359	2*16pin	euroconnector	Ви
	P••••6	54.01.0359	2*16pin	euroconnector	дu
	Q101	50.03.0350	J 112	N-JFET	NS,Mot,Six
	Q102	50.03.0350	J 112	N-JFET	NS,Mot,Six
(01)	Q103		not used		
	Q104	50.03.0350	J 112	N-JFET	NS,Mot,Six
	Q105	50.03.0350	J 112	N-JFET	NS, Mot, Six
	Q106	50.03.0350	J 112	N-JFET	NS, Mot, Six
	Q107	50.03.0350	J 112	N-JFET	NS, Mot, Six
	Q108	50.03.0350	* J 112	N-JFET	NS, Mot, Six
	Q109	50.03.0350	* J 112	N-JFET	NS, Mot, Six
	Q110	50.03.0350	* J 112 * J 112	N-JFET	NS, Mot, Six
	Q111	50.03.0350	0 112	N-JFET	NS, Mot, Six
	Q • • • 112 Q • • • 113	50.03.0350 50.03.0350	J 112 J 112	N-JFET	NS,Mot,Six NS,Mot,Six
	Q113	50.03.0350	J 112 J 112	N-JFET	NS, MOC+SIX NS, MOC+SIX
	Q201	50.03.0350	J 112	N-JFET N-JFET	NS, MOL, SIX
	Q202	50.03.0350	J 112	N-JFET	NS, Mot, Six
(01)	Q • • • 203	06600600	not used	14-31 61	NS THOU SIX
(01)	Q • • • 2 0 4	50.03.0350	J 112	N-JFET	NS,Mot,Six
s T U	D E R (03)	84/12/01 TA	HL-ST-IN	PUT-UNIT-B-4CH/8CH	1.912.141.00 PAGE 5

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EG	QUIVALENT	MANUF.
	Q•••205	50.03.0350	J 112	N-JFET		NS,Mot,Six
	Q206	50.03.0350	J 112	N-JFET		NS, Mot, Six
	Q • • • 207	50.03.0350	J 112	N-JFET		NS, Mot, Six
	Q208	50.03.0350	* J 112	N-JFET		NS, Mot, Six
	Q209	50.03.0350	* J 112	N-JFET		NS, Mot, Six
	Q210	50.03.0350	* J 112	N-JFET		NS, Mot, Six
	Q211	50.03.0350	* J 112	N-JFET		NS, Mot, Six
	Q212	50.03.0350	J 112	N-JFET		NS, Mot, Six
	Q213	50.03.0350	J 112	N-JFET		NS, Mot, Six
	Q214	50.03.0350	J 112	N-JFET		NS, Mot, Six
	Q301	50.03.0350	J 112	N-JFET		NS, Mot, Six
	Q302	50.03.0350	J 112	1-JFET		NS, Mot, Six
	Q303	50.03.0350	J 112	1-JFET		NS, Mot, Six
	Q304	50.03.0350	J 112	1-JFET		NS, Mot, Six
	Q305		BC 307	NP IC>100mA, B>1	00 50030515	any
	R101	57.11.3152	l•5 kOhm	1% 0.25W		
	R102	57.11.3392	3•9 kOhm	1% U•25W		
	R103	57.11.3152	1.5 kOhm	1% 0.25W		
	R•••104	57.11.3392	3•9 kOhm	1% 0.25W		
(01)	R•••105	57.11.3392	3.9 kOhm	5% 0.25W		
	R106	57.11.4331	330 Onm	5% 0.25W		
	R•••107	57.11.4472	4.7 kOhm	5% 0.25W		
	R108	57.11.3153	15 kOhm	5% 0,25W		
	R109	58.01.8502	5 kOhm	10%		
	R110	57.11.4122	1.2 kOhm	5% 0,25W		
	R•••111	57.11.4472	4.7 kOhm	5% 0•25W		
	R112	57.11.3132	1.3 kOhm	5% 0.25W		
(01)	R•••113	1.010.007.58	10 kOhm		ned with R 213	St
	R•••114	57.11.3132	1.3 kOhm	5% 0.25W		3 0
	R•••115	57.11.4472	4•7 kOhm	5% U.25W		
	R116	57.11.4333	33 kOhm	5% 0.25W		
	R•••117	57.11.4682	6.8 kOhm	5% 0.25W		
	R118	57.11.4104	100 kOhm	5% 0•25W		
	R•••119	57.11.4104	100 kOhm	5% 0•25W		
	R120	57.11.4104	100 kOhm	5% 0.25W		
	R•••121	57.11.4104	100 kOhm	5% 0.25W		
s t u	D E R (0	3) 84/12/01 TA	HL-ST-INF	-UNIT-B-4CH/8CH	1.912.141.00	PAGE 6

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS ,	/ EQUIVALENT	MANUF.
	R•••122 R•••123	57.11.4682 57.11.4330	6•8 kOhm 33 Ohm	5% 0•25W 5% 0•25W		
	R124	57.11.4333	33 kOhm	5% 0•25W		
	R125	57.11.3153	15 kOhm	1% 0,25W		
	R126	57.11.4333	33 kOhm	5% 0.25W		
	R127	1.010.004.58	10 kOhm		ariable resistor	St
	R•••128	57.11.4682	6.8 kOhm	5% 0.25W		
	R•••129	57.11.3132	1.3 kOhm	5% 0.25W		
	R•••130	57.11.4332	3.3 kOhm	5% 0.25W		
	R•••131	57.11.4472	4•7 kOhm	5% 0.25W		
	R132	57.11.4333	33 kOhm	5% 0•25W		
	R•••133	57.11.4332	3.3 kOhm	5% 0.25W		
	R•••134	57.11.4332	3•3 kOhm	5% 0.25W		
	R•••135	57.11.4333	33 kOhm	5% 0•25W		
	R•••136	57.11.4472	4•7 kOhm	5% 0.25W		
	R•••137	57.11.4393	39 kOhm	5% Ü•25₩		
	R•••138	57.11.4333	33 kOhm	5% 0.25W		
	R•••139	57.11.4472	4•7 kOhm	5% U•25₩		
	R•••140	57.11.4333	33 kOhm	5% 0.25W		
	R•••141	1.010.008.58	10 kOhm	10% pos•log•va	riable resistor	St
	R•••142	57.11.4332	3•3 kOhm	5% 0.25W		
(01)	R•••143		not used			
(01)	R•••144		not used			
(01)	R145		not used			
(01)	R•••146		not used			
	R•••147		33 kOhm	5% 0.25W	57114333	option 2
	R•••148	57.11.4332	3.3 kOhm	5% 0.25W		
	R•••149	57.11.4104	100 kOhm	5% 0.25W		
	R•••150	57.11.4104	100 kOhm	5% 0.25W		
	R•••151	57.11.4104	100 kOhm	5% 0.25W		
	R•••152	57.11.4104	100 kOhm	5% 0.25W		
	R•••153	57.11.4332	3.3 kOhm	5% 0.25W		
	R154	57-11-4104	100 kOhm	5% 0.25W		
	R•••155	57.11.4104	100 kOhm	5% 0.25W		
	R•••156	57.11.4104	100 kOhm	5% 0.25W		
	R • • • 157	57.11.4104	100 kOnm	5% 0.25W		
	R•••158	57.11.4332	*3•3 kOhm	5% 0.25W		
S T U	D E R (0	03) 84/12/01 TA	HL-ST-IN	PUT-UNIT-B-4CH/8CH	1.912.141	.00 PAGE 7

IND.	POS.NO.	PART NO.	VALUE	SPECIF	ICATIONS / EQU	JIVALENT	MANUF.
	R•••159	57•11•4104	*100 kOhm	5%	Û•25₩		
	R160	57.11.4104	*100 kOhm	5%	0.25W		
	R161	57.11.4104	*100 kOhm	5%	0.25W		
	R162	57.11.4104	*100 kOhm	5%	0.25W		
	R163	57.11.4332	#3.3 kOhm	5%	0.25W		
	R•••164	57.11.4104	*100 kOhm	5%	0.25W		
	R•••165	57.11.4104	*100 kOhm	5%	0.25W		
	R 166	57.11.4104	*100 kOhm	5%	0.25W		
	R167	57.11.4104	*100 kOhm	5%	0.25W		
	R•••168	57.11.4103	10 kOhm	5%	0.25W		
	R169	57.11.4104	100 kOhm	5%	0.25W		
	R170	57.11.4104	100 kOhm	5%	0.25W		
	R•••171	57.11.4103	10 kOhm	5%	U.25W		
	R•••172	57.11.4104	100 kOhm	5%	0.25W		
	R173	57.11.4104	100 kOhm	5%	0.25W		
	R174	57.11.4104	100 kOhm	5%	0.25W		
	R•••175	57.11.4332	3•3 kOhm	5%	Ü•25₩		
	R•••176	57.11.3362	3•6 kOhm	5%	0 • 25W		
	R•••201	57.11.3152	1.5 kOhm	1%	0.25W		
	R202	57.11.3392	3•9 kOhm	1%	0.25W		
	R•••203	57.11.3152	1.5 kOhm	1%	0.25W		
	R•••204	57.11.3392	3.9 kOhm	1%	0.25W		
(01)	R•••205	57.11.3392	3•9 kOhm	5%	0.25W		
	R•••206	57.11.4331	330 Ohm	5%	0.25W		
	R207	57.11.4472	4.7 kOhm	5%	0.25W		
	R•••208	57.11.3153	15 kOhm	5%	U , 25W		
	R•••209	58.01.8502	5 kOhm	10%			
	R•••210	57.11.4122	1∙2 kOhm	5%	0 • 25W		
	R•••211	57 • 11 • 4472	4•7 kOhm	5%	0.25W		
	R•••212	57.11.3132	1.3 kOhm	5%	0.25W		
(01)	R•••213	1.010.007.58	10 kOhm	20%	lin. combir	ed with R 113	St
	R•••214	57.11.3132	1.3 kOhm	5%	0.25W		
	R215	57.11.4472	4.7 kOhm	5%	0.25W		
	R•••216	57.11.4333	33 kOhm	5%	0.25W		
	R•••217	57.11.4682	6∙8 kOhm	5%	0.25W		
	R218	57.11.4104	100 kOhm		U.25W		
	R•••219	57.11.4104	100 kOhm	5%	0.25W		
s T U	D E R (0	03) 84/12/01 TA	HL-ST-IN	PUT-UNIT	-B-4CH/8CH	1.912.141.00	PAGE 8

IND.	POS.NO.	PART NO.	VALUE	SPEC	FICATIONS / EQUI	VALENT	MA	NUF.
	R220	57.11.4104	100 kOhm	5%	0.25W			
	R•••Z21	57.11.4104	100 kOhm	5%	0.25W			
	R•••222 R•••223	57.11.4682	6.8 kOhm	5%	0.25W			
	R•••223	57.11.4330	33 Ohm	5%	0.25W			
		57.11.4333	33 kOhm	5%	0.25%			
	R•••225 R•••226	57.11.3153	15 kOhm	1%	0+25W			
	R227	57•11•4333 1•010•004•58	33 kOhm 10 kOhm	5%	0.25W	0 -05:540-		
	R228	57.11.4682	6.8 kOhm	10% 5%	pos.log.variabl	e 16212 COL		St
	R•••229	57.11.3132	1.3 kOhm	5%	0.25W 0.25W			
	R•••230	57.11.4332	3.3 kOhm	5%	0.25M			
	R231	57.11.4472	4.7 kOhm	5%	J•25W			
	R232	57.11.4333	33 kOhm	5%	0.25W			
	R•••233	57.11.4332	3•3 kOhm	5%	0.25M			
	R234	57.11.4332	3.3 kOhm	5%	0.25W			
	R235	57.11.4333	33 kOhm	5%	Û•25W			
	R236	57.11.4472	4.7 kOhm	5%	0.25W			
	R237	57-11-4393	39 kOhm	5%	0 • 25W			
	R238	57.11.4333	33 kOhm	5%	0 • 25 W			
	R239	57.11.4472	4.7 kOhm	5%	0.25%			
	R240	57.11.4333	33 kOhm	5%	0.25W			
	R241	1.010.008.58	10 kOhm	10%	poselogevariabl	e resistor		St
	R242	57.11.4332	3.3 kOhm	5%	G-25W			-
(01)	R243		not used					
(01)	R244		not used					
(01)	R245		not used					
(01)	R•••246		not used					
(01)	R•••247		not used					
	R248	57.11.4332	3•3 kOhm	5%	0.25W			
	R•••249	57.11.4104	100 kOhm	5%	0.25W			
	R250	57.11.4104	100 kOhm	5%	0.25W			
	R•••251	57.11.4104	100 kOhm	5%	0.25W			
	R•••252	57.11.4104	100 kOhm	5%	0.25W			
	R•••253	57.11.4332	3.3 kOhm	5%	0.25W			
	R•••254	57.11.4104	100 kOhm	5%	0.25W			
	R•••255	57.11.4104	100 kOhm	5%	0.25W			
	R256	57-11-4104	1 0 0 kOhm	5%	0.25W			
STU	D E R (03) 84/12/01 TA	HL-ST-INI	PUT-UNI	T-B-4CH/8CH	1-912-141-00	PAGE	9

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQU	JIVALENT	MANUF.
	R257	57-11-4104	100 kOhm	5% 0.25W		
	R258	57.11.4332	‡3.3 kOhm	5% 0.25W		
	R•••259	57.11.4104	#100 kOhm	5% 0.25W		
	R260	57-11-4104	*100 kOhm	5% 0.25H		
	R261	57.11.4104	‡100 kOhm	5% 0.25W		
	R•••262	57-11-4104	*100 kOhm	5% 0.25W		
	R263	57.11.4332	≠3.3 kOhm	5% 0.25W		
	R•••264	57.11.4104	*100 kOhm	5% 0.25W		
	R•••265	57-11-4104	*100 kOhm	5% 0.25W		
	R266	57-11-4104	‡100 kOhm	5% U.25W		
	R267	57.11.4164	*100 kOhm	5% 0•25₩		
	R•••268	57.11.4103	10 kOhm	5% 0.25W		
	R269	57-11-4104	100 kOhm	5% 0.25W		
	R•••270	57.11.4104	100 kOhm	5% C.25W		
	R•••271	57.11.4103	10 kOhm	5% Ŭ•25W		
	R272	57.11.4104	100 kOhm	5% 0.25W		
	R•••273	57.11.4104	100 kOhm	5% ฃ•25พ		
	R•••274	57.11.4104	100 kOhm	5% 0•25W		
	R275	57.11.4332	3•3 kOhm	5% 0•25พ		
	R•••276	57.11.3362	3•6 kOhm	5% 0.25W		
	R•••301	57.11.3472	4.7 kOhm	1% 0.25W		
	R302	57.11.3472	4.7 kOhm	1% 0.25W		
	R•••303	57.11.3473	47 kOhm	1% 0.25W		
	R•••304	57.11.3473	47 kOhm	1% J.25W		
	R•••305	57.11.4333	33 k0hm	5% บ∙25พ		
	R307	57.11.3202	2 kOhm	1% 0.25W		
	R308	57.11.4104	100 kOhm	5% 0.25W		
	R309	57.11.4104	100 kOhm	5% Ú•25ฟ		
	R310	57.11.4104	100 kOhm	5% 0.25พ		
	R•••311	57.11.4105	1 MOhm	5% 0•25W		
	R•••312	57.11.4164	100 kOhm	5% U.25W		
	R313	57.11.4104	100 kOhm	5% U.25W		
	R•••314	57.11.4104	100 kOhm	5% 0.25W		
	R•••315	57.11.4105	1 MOhm	5% 0.25W		
	R316	57-11-4104	100 kOhm	5% 0.25W		
	R317	57.11.4104	100 kOhm	5% 0.25W		
	R•••318	57.11.4102	1 kOhm	5% 0.25W		
STU	D E R (03) 84/12/01 TA	HL-ST-IN	PUT-UNIT-B-4CH/8CH	1.912.141.00	PAGE 10

IND.	POS.NO.	PART NO.	VALUE	SPEC	FICATIONS / EQ	UIVALENT	MANUF.
	R•••319	57.11.4331	330 Ohm	5%	U+25W		
	R•••320	57.11.4103	10 kOhm	5%	0.25W		
	R•••321	57.11.4335	3•3 MOhm	5%	0 • 25W		
	R322	57.11.4104	100 kOhm	5%	U.25W		
	R•••323	57.11.4104	100 kOhm	5%	0.25W		
(01)	R•••324		not used				
(01)	R325		not used				
(01)	R•••326		not used				
(01)	R•••327	57.11.4105	1 MOhm	5%	0.25W		
(01)	R328		not used				
	R•••329	57.11.4331	330 Ohm	5%	0 • 25W		
	R•••330	57.11.4103	10 kOhm	5%	0.25W		
	R331	57.11.4681	680 Ohm	5%	0 • 25W		
	R332	57.11.4102	1 kOhm	5%	0.25W		
	R•••333	1.369.150.03	10 kOhm	20%	pos.log.varia	ble resistor	St
	R334	1.369.150.03	10 kOhm	20%	poselogevaria	ble resistor	St
	R•••335	1.369.150.03	10 kOhm	20%	pos-log-varia	ble resistor	St
	R336	57.11.4332	3•3 kOhm	5%	U • 25W		
	R337	57.11.4332	3.3 kOhm	5%	0.25W		
	R338	57.11.4332	3.3 kOhm	5%	0.25W		
	R • • • 3.39	57.11.4471	470 Ohm	5%	0.25W		
	R340	57.99.0209	5.6 Ohm		PTC	Philips Nr.2322	662 91905
	R341	57.99.0209	5.6 Ohm		PTC	Philips Nr.2322	662 91005
	R•••342	57.99.0209	5.6 Ohm		PTC	Philips Nr.2322	662 91905
	R343	57.99.0206	50 Onm			Philips Nr.2322	
	R • • • 344	57.11.4102	1 kOhm	5%	ù•25₩	·	
	R345	57.11.4104	100 kOhm	5%	0.25W		
(01)	R346		not exist				
(01)	R401		not used				
(01)	R402		not used				
(01)	R•••403		not used				
(01)	R • • • 404		not used				
(01)	R501		not used				
(01)	R • • • 502		not used				
(01)	R503		not used				
(01)	R • • • 504		not used				
(01)	R505		not used				
s T U	DER (C	03) 84/12/01 TA	HL-ST-INF	PUT-UNI	T-B-4CH/8CH	1.912.141.00	PAGE 11

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF
(01)	R506		not used		
(01)	R507		not used		
(01)	R•••508		not used		
	S101	55.15.0004	4 * U		red
	S • • • 102			combined with S101	
	S • • • 103	55.15.0002	* 2 * U		red ITT
	S104	55.15.0002	2 ¢ U		red ITT
	S105	55.15.0002	2 * U		red ITT
	S106	55.15.0002	* 2 * ∪		red ITT
	S107	1.010.008.59	1*∪		R 141/241 St
	5201			combined with \$101	
	S202			combined with \$101	
	S • • • 203		*	combined with S103	
	S • • • 204			combined with \$104	
	S • • • 205			combined with \$105	
	\$ • • • 206		*	combined with \$106	
	S • • • 2 0 7	1.010.008.59	1*U		
	5301	1.912.120.03	2 * U	hutton: 55030303	red
	S • • • 302			combined with \$301	
	S303		2*U	mutual realising with \$301/\$302	
	S304			combined with \$303	
	S • • • 3 0 5	55.15.0012	2*∪	button: 55150106	red
	S • • • 306			combined with \$305	
	S • • • 307	1.369.150.03	1*∪		R 333 St
	\$ 308	1.369.150.03	1*U		
	S • • • 309	1.369.150.03	1*U		
	T101	1.022.451.00		input trafo 1:0.62	St
	T201	1.022.451.00		input trafo 1:0.62	St
	W1			by 8-CH not equipped	
	W • • • • 2			by 8-CH not equipped	
	W 3			by 8-CH not equipped	
	W 4			by 8-CH not equipped	
(01)	XDL . 301				

(01) 84/03/01 click suppression of attenuator

(02) 84/10/04 suppression of high frequency

* ONLY 8-CHANNEL 1.912.143.00

CE=Ceramic, CF=Carbon Film, EL=Electrolytic, MF=Metal Film, PE=Polyester, PP=Polypropylen, PS=Polystyrol

MANUFACTURER: Bu=Burndy, Ex=Exar, Fc=Fairchild, GI=General Instrument HP=Hewlett Packard, ITT=Intermetall, Mot=Motorola, NS=National Semiconductors, Ph=Philips, Ra=Raytheon,

Sig=Signetics, Six=Siliconix, St=Studer,

TI=Texas Instrument

ORIG 83/01/20 (01) 84/03/01 (02) 84/10/04 (03) 84/12/01

S T U D E R (03) 84/12/01 TA HL-ST-INPUT-UNIT-B-4CH/8CH 1.912.141.00 PAGE 13

AUX MASTER

Hilfssummeneinheit

Die drei Mono-Hilfsausgänge (AUX 1...3) und der Stereo-Hilfsausgang (AUX 4) der Eingangseinheiten werden über Sammelschienen den Hilfssummeneinheiten zugeführt und dort auf Nominalpegel verstärkt.

Vor dem Summenregler (SEND) kann das Signal durch ein Hochpassfilter mit variabler Grenzfrequenz geführt, und über PFL vorgehört werden. Die MUTE-Taste unterbricht den Signalweg. Befehle können über das Kommandomikrofon mit der TALK BACK-Taste direkt auf jede Hilfssumme gegeben werden.

Filter Variables Hochpassfilter mit einer Steilheit von 12dB pro

Oktave. Grenzfrequenz einstellbar von 30...330Hz.

Send Summenpegelregler

Talk Back Gegensprechen auf den betreffenden AUX-Kanal. Bei

gedrückter Talk Back-Taste wird das AUX-Signal um

20 dB gedämpft.

Mute Stummschaltung der Hilfssumme

PFL Vorhören der Hilfssumme

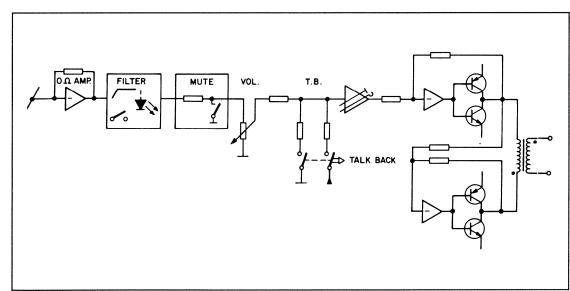
Ausgangspegel +6dBu @ 600Ω

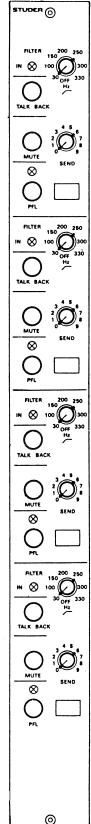
Speisung \pm 15 V / 200 mA

- 6 V / 1...80 mA

-24 V / < 8 mA

Blockdiagramm





AUX MASTER

Auxiliary master unit

The three mono auxiliary outputs (AUX 1...3) and the stereo auxiliary output (AUX 4) of the output units get fed to the auxiliary master units by the bus bars and there they get amplified to normal level.

Before the master control (SEND), the signal can be led through a high-pass filter with variable cutoff frequency, and it can be pre-listened over PFL. The MUTE push button interrupts the signal path. Orders can directly be given to each auxiliary master by the command microphone with the TALK BACK push button.

Filter High-pass filter with 12 dB/octave slope. The attack

frequency can be varied from 30 Hz to 330 Hz.

Send Master level control

Talk back Talk back to the referring auxiliary channel. The talk

back key activates damping of 20dB on the AUX signal.

Mute Push button for muting the AUX channel.

PFL Pre-listening of the AUX channel

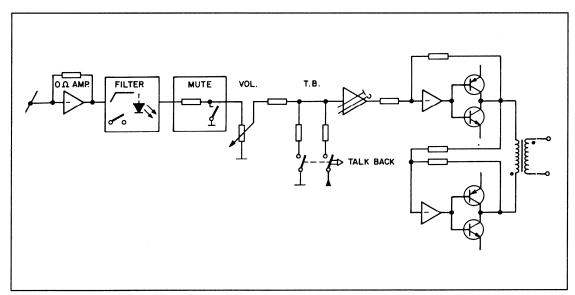
Output level +6 dBu @ 600Ω

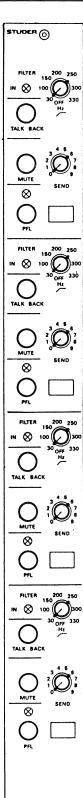
Supply \pm 15 V / 200 mA

- 6 V / 1...80 mA

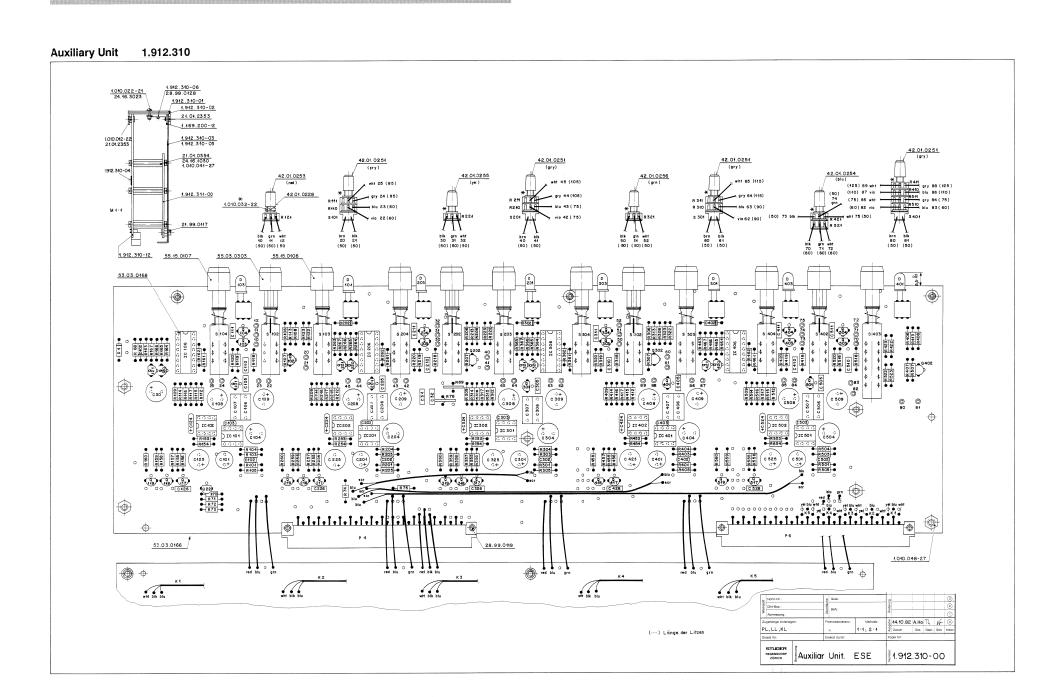
-24 V / < 8 mA

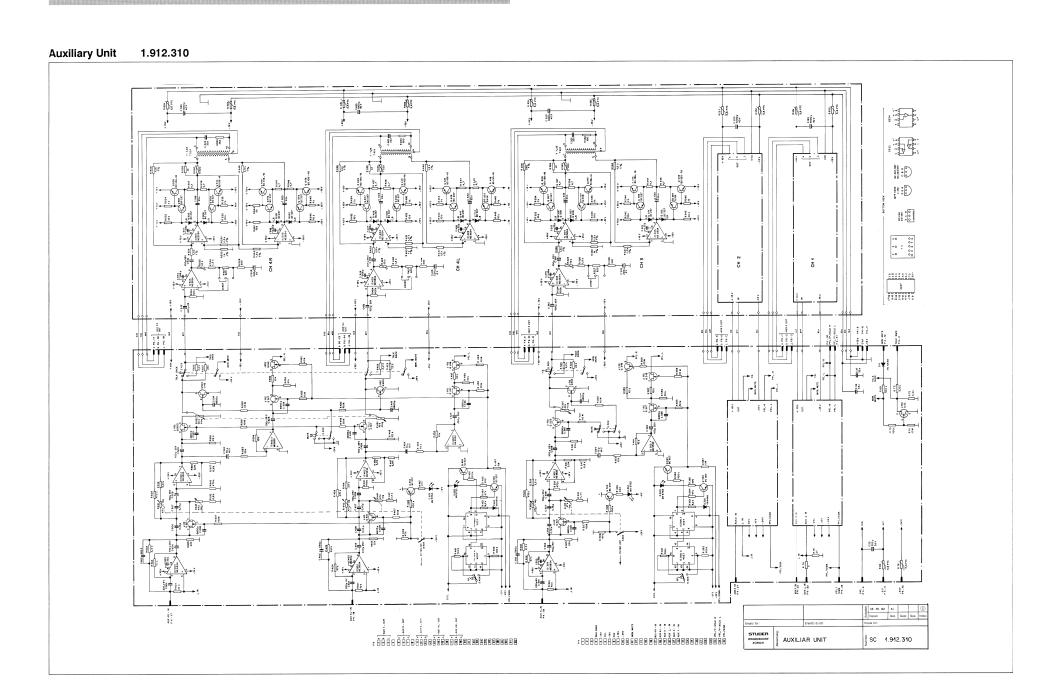
Block diagram





0





Auxiliary Unit 1.912.310

INC	POS NO I		PART N	0	t VA	LUE	-	SPE	CIFICATIO	NS/EQUIVA	LENT		MFF
	C of	59	.22	. 2221	2	20	μ		6V	EL			
	02	59	.34	.5561		60				CER			
	03	59	.34.	2330		33	g			CER			
	04	59	. 22	5101	ło	00	и		25V	EL			
	05	59	. 06.	0682	68	∞	a		63V	Pe			
	06	59	. 02	2124	0.	12	u	5%		Pc			
	07	.59	. 02	2124	0.	12	м	5%		Pc			
	08	59	. 22	5101	10		ш		25V	EL			
	09	59	.22	5101	10	x	и		257	٤L			
	10	59	. 06.	0682	68	∞	D		63V	Pε			
	11	59	. 06	0682	68	200	р		637	Pe			
	12	59	.22	5101	10	0	и		25V	EL			
	13						7						
	14	59	. 34	4680	- 6	8	р			CER			
	15	59	.22.	2221	2	20	u		61	EL			
П	16	59	. 22.	5101	ło	0	м		25V	EL			
	17	59	. 34.	2220	2	2	p			CER			
	18	59	. 06.	0333	0.0	33	м		63V	Ρε			
	19	59	. 34.	2220	2	2	р			Cer			
	20	59	. 06	0333	0.03	33	4		63V	Pe		-	
	21					-							
	22	59	. 06	0333	0,0	33	ш		631	Pε			
	23	59	. 25	5102	100	00	u		407	EL			
П	24	59	.26	2100		0	M		46 V	SAL			
	25	59	. 25.	5101	10	00	u		25 V	EL			
	26	59	. 06.	0682	68	∞	р		63V	Pe			
	27												
	28												
	29												
	30	59	.22	5101	10	00	μ		25V	EL			
NO	DATE	-	N/	ME	1								
(3)					CER	C٤	RAI	4IC					
0					EL	Εu	ECT	ROLYTIC					
@	1, 2.8	S	V-		Pc	Ро	LYC	ARBONAT					
C	30.1.8	4	A 70	-	Pε	Ро	LYE	STER					
C	24.9.83	2	ĩ١		SAL	S٥	LIE	ALUMINU	ч				

NO	POS NO		PART N	ю	1	VALUE	L			NS/EQUI	VALENT	MF
7	C 31	59	. 06	. 033	3	م 33م,α			63 V	F	,e	
٦	32	59	. 05	. 033	3 ,	n, 33 µ			63 Y	P	'E	
	100	50	-04	. 211	1 1	V 5753	LED	Rε	D			IR
	02					N 4 4 4 8						
T	03	50	. 04	. 211	1 1	175753	LED	RE	D			IR
П	4	50	. 04	.012	5 1	V4448						
٦		2128220701	Lance Value		Т							
					Ι							
3	IC01	50	. 05	. 024	4 N	E 5534 A		0p	- AHP	DIP 8	3	\$16
П	. 02					E 5532	DUAL					١,
П	03					E 5534				DIP 8		
	04	50	. 05	. 024	31	E 5534				DIP 8		
П	05	50	. 05	024	3 1	E 5534				DIP 8		
	06	50	. 07	. 002	7	4027	DUAL	J-	K FF		MOS	
╗					Т							
		2720-0			Ι							
7	1c25	54	.04.	0020	П	PIN						
7		54	. 0!	. 002	113	UHPER						
П												
٦					T							
	P 4					2 * 16p						
٦	6	54	.01	035	9 :	2×16p						
					Τ							
					Ι							
	0 01			035			J-F					S×
	02					3C 3o7	PNP				BC 557	
	03					J 112	J-7					S×
	04					J 112	J- F					S×
	05					C 237	NPN				BC 547	
	06	50	· o3	. 051	5 E	C 307	PNP	•			BC 557	
ND	DAT	E	N.	AME	1							
9					1						RECTIFIER	
3				,	1						VETICS/PAILI	PS
	1. 2.8		1/3		1				S	× Sil	ICCNIX	
	30.1.8		vi.		1							
0	24.9.8	12	T۱	1	1							
-	TUDI	CD.	Διι	(II 1 A	D	UNIT			11 0	12 2	10.00 PAGE	2 ni 4

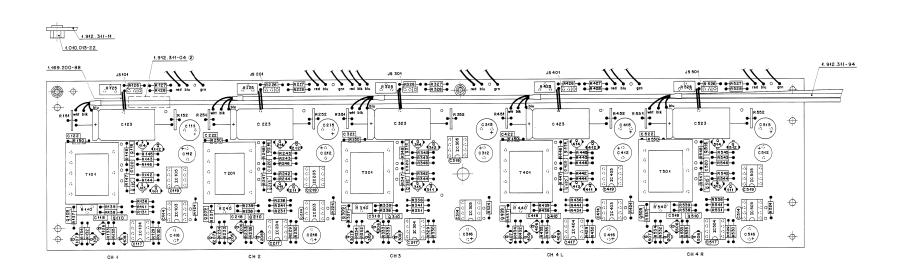
1.912.310.00 PAGE 5 of 6

O POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVAL	ENT MFR		POS NO	PART NO	VALUE
R 410		1				₹36	57.11.3511	510
	1.912.001.53	4 * 47 k	ON- OFF SW LEFT	St			57.41.4479	4,7
510		- Los					57.11.4479	4,7
511							57.11.4120	12
12	57.11.4392	3.9 k			1		58.01.9201	220
13	57,11,4391	390					57.41.3152	1,5 k
14	57.11.4392	3,9 k					57.11,4103	10 1
15	57,44.4474	470 k					57.11.4103	10 1
16	57, 11, 4392	3,9 k					57.11.4102	1 4
17	57,11,4682	6,8 k					57.11.4102	1 1
18	57.11.4223	22 k					57.41.3152	1,5
19	57.11.6106	10 M					57.11.4479	4,7
-20	57.11.6106	10 M			Ш		57.11.4479	4,7
21	1.912,001.24				Ш	49		
421		2 * 10k					57.11.4151	150
521	1.912.001.34						57.99.0209	5,6
22	57.11.4223	22 k					57.99.0209	5,6
23	57.11.4222	2,2 k					57.11.4103	10
24	57.11.4104	100 k					57.11.4103	10 1
25	58. of . 71o3	10 k	Trin				57.11.6106	10 M
26	57.11.4152	1,5 k					57.11.4103	10 1
27	57.11.3621	620	2%		H		57.11.4103	10 1
28	57.11.3361	300	2%		H		57.11.6106	
29	57.11.3152		1%				57.11.4103	10
_30	57.11.31o2	1,0 k			H		57.11.6106	10 1
.31	57.41.3452		1%		H		57.11.4104 57.11.4104	100
.32	57.11.4103	fo k			H			100
33	57.11.4103	10 k			H		57.11.4822 57.11.4473	82 I
34	57.11.4102	1 k			H		57.11.4473	390
35	57.11.4102	1 k				11.00		350
DAT	E NAME		C. (TUDER	(A)	DATE	NAME	
9			20. 3	NODER	0			
0						4.3.85	Vr	
0 1.2.					1	30-1-84	A.78-	
30.1				- 1		24.9.82	Th.	
24.9.			1, 0,0,0,1-	. 00 PAGE 4 OF 6	-	TUDE		Lhut
STUD								

	POS NO	1	PART N		VALUE		SPE	CIFICATION	S/EQUIVA	LEN	r .	MF
7	207		. 03.	0436	BC 237	7	NPN			BC	547	1
7	08	50	. 03.	0515	BC 301	7	PNP			BC	557	
7	09	50	. p3.	0510	BD 136	16	PNP					
T	10	50	. 03.	0495	BD135-	16	NPN					T
7	11	50	. 03.	0436	BC 235	7	NPN			BC	547	
	12	50	. 03.	0515	BC 30'	7	PNP				557	
	13	50	0.03.	0436	BC 23	7	NPN			BC	547	
7	14				BC 30		DN5			BC	557	
T	15	50	. 03.	0510	BD 136	-16	PNP					
П	16	50	. 03.	0495	BD 135	-16	NPN					
П	17	50	. 03.	0350	3112		J-fET					S×
П	18	50	. 03.	0350	J112		J-FET					S×
1	19			0350			J-FET					Sx
П	20				BC 23'		NPN				547	_
П	21	50	. 03.	0515	BC 30'	7	PNP			BC	557	1
	22	50	. 03	0350	J112		J-FET					S×
3	₹01	57	7.44.	4103	10	k			MF			1
	02											1
	03			4222		k	2%					_
	04			4473	47	k						1
	05			4223	22	k						1
	06	57	. 11.	4473	47	k						_
	07			6106		М						_
\perp	08			4104		k						_
	09	57	1.11.	4474	470	k						
	10				2*47	k	On-OFF	Sw LEF	Τ			SŁ
	11	1.91	2.00	1.52) -Los	_						_
\perp						_						_
												1
IND	DAT	re	NA.	ME						_		
0					MF ME	TA	L FILM				LICONI	x
0			L.,						St	ST	UDER	
	1.2.		V-									
	30.1		A Z									
Ol:	24.9.	82	. Th	-		_					_	
	TUD	FR	Aux	ILIAR	Unit			1.91	2.310	0.0	PAGE	3 of

VO	POS NO		PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
T	R66	57	. 11.4104	100 k		
1	67	57	. 11. 4105	/ M		
T	68	57	. 11. 4104	100 k		
7	69	57	.99.0209	5.6	PTC	Ph
7	70	57	.11.4104	100 k		
1	71		.11.6106	10 M		L.
T	72	57		2.2 k		
T	73		.11.4392	3,9 k		
	74		. 11. 4109	- 1		
1	75	57	. 11 . 4270	27		
	76	51	. 99. 0209	5,6	PTC	Ph
1						_
-	\$01			10 ON	COMBINED WITH RIO/RII	_
1	02		.15,0003	2р	Pushbutton Switch	_
-			. 03. 0303		KNOB RED INDIC	_
-	03		.15.0003	2p	Pushbutton Switch	_
	403		. 15. 0004	40	Pushbutton Switch	
			. 15. 0106		KNOB GRY/RED	
	S04		. 15. 0003	2p	Pushbutton Switch	
		55	.15.0107		KNOB GRY/GRY	-
						-
				1.105	1	
-	01	1.02	2.353.00	1:1,25	LINE OUT TRAFO	
-	XIC	53	3.03.0166	8р	IC SOCKET	\vdash
			.03.0168	16p	IC SOCKET	
-	XLED	54	.01.0249			+-
VD	DAT	TE.	NAME		Ph Punips	_
3					Ph Philips	
<u>ම</u>			W-			
	1. 2.		N-			
2	24.9.		Th.			
2				LAICE	1.912.310.00 PAGE	6
5	מטדה	ER	AUXILIAR	UNII	1.912.310.00 PAGE	OOF

AUX Line Amplifier Board 1.912.311



C 123 / C 223 / C 323 / C 423 / C 523 verklebt nach BV 640 ③

	STUDER REGENSDORF ZÜRICH	Aux Amp	Line Board		Numer	1.912	2.3	11-	00	ŀ
£r	satz für:		Ersetzt durch:		160	opie für:				_
	PL 4.942.3	10	±	2:1	Age	Datum	Gez.	Gepr.	Ges.	Inde
Zı	gehörige Unterlag	en:	Freimasstoleranz:	Maßstab:	995	14.9.82	Ho	TL.	W	0
š	Abmessung:		g Beh.:		×	304.84	A.Ho	14	10	0
DIN-Bez			g Beh.	940			A.Ho	Vr	Vr	2
	Norm-Nr.:		g Gite:		Andennig	19.11.86	3 9%	14	w	(3
							1			4

Studiomonitor- und Kommando-Einheit

Studiomonitor

Gegenseitig auslösende Drucktasten erlauben die Wahl zwischen sechs verschiedenen Quellen, die ins Studio eingespielt werden können. Die Abhörlautstärke wird über VCA gesteuert.

Die Studio-Lautstärke kann wahlweise durch das eingebaute Potentiometer oder durch eine von aussen kommende Steuerspannung eingestellt werden. Bei offenen Mikrofonreglern werden die Studiolautsprecher abgeschaltet. Der getrennte Kopfhörerausgang bleibt dabei eingeschaltet. Falls trotz offenen Mikrofonreglern Lautsprechereinspielen gewünscht wird, ist die Taste REIN zu drücken.

Talk Back Send

TB STUDIO TB SPEAKER

Gegensprechen ins Studio ist über zwei Wege möglich: über die Einspiellautsprecher

über eine im Sprechertisch oder im Dirigentenpult eingebaute Sprechstelle.

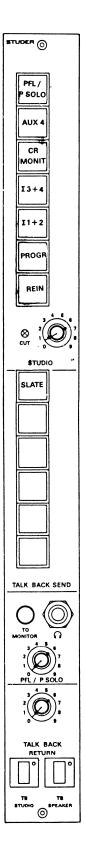
Die Taste SLATE schaltet das Kommandosignal auf die Summensammelschienen. Über fünf weitere Tasten kann Verbindung zu gleichwertigen Gegensprechstellen aufgenommen werden. Das von diesen Stellen kommende Antwortsignal wird über den TB/PFL-Lautsprecher wiedergegeben.

PFL / P.SOLO

In der Studiomonitor- und Kommando-Einheit sind auch die Sammelschienenverstärker von Vorhören (PFL) und Abhören nach Panoramapotentiometer (P.SOLO) sowie der dazugehörende Lautstärkeregler und eine Kopfhörerbuchse untergebracht. Bei eingestecktem Kopfhörer wird der Vorhörlautsprecher unterbrochen

Mit der Taste PFL/P.SOLO TO MONITOR wird der Vorhörlautsprecher ebenfalls unterbrochen. Sobald eine oder mehrere PFL- und P.SOLO Tasten gedrückt sind, wird automatisch das Monitorsignal unterbrochen und an seiner Stelle das gewählte PFL- oder P.SOLO-Signal auf die Abhörlautsprecher geschaltet. Dies ermöglicht, eine beliebige Gruppe von Eingangskanälen mit der richtigen, am Panoramapotentiometer eingestellten Stereobalance abzuhören. Die laufende Aufnahme oder Sendung wird dabei nicht beeinflusst. Sind alle angewählten PFL/P.SOLO Tasten durch nochmaliges Drükken wieder ausgeschaltet, oder werden diese durch Betätigung der RESET-Taste auf dem Signalisationseinschub zurückgestellt, so wird wieder das normale Monitorsignal hörbar.

(Siehe auch Blockdiagramm PFL-System)



Studio monitor and talk back unit

Studio monitoring

With the aid of interlocking push buttons, six different sources can be fed back to the studio. The monitoring volume is controlled via VCAs.

The studio volume can either be adjusted with the built-in potentiometer or with an external control voltage. With open microphone channels the studio speakers are muted while the separate headphones output remains active. If the speakers are to be reinjected though the microphone controls are open, the REIN button must be pressed.

Talk back send

Two methods are available for talking back to the studio:

TB STUDIO TB SPEAKER

via the talk back speakers

via a loudspeaker built into the announcer's or the conductor's desk.

The SLATE key connects the talk back signal to the bus. Five additional keys are available for communicating with similarly equipped talk back stations. The answering signal is reproduced by the TB/PFL speaker.

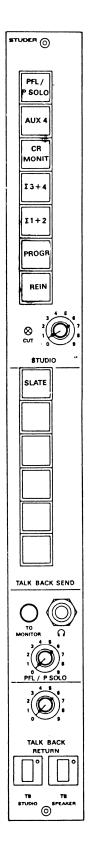
PFL / P.SOLO

The bus amplifiers of pre-fader listening (PFL) and monitoring after the panorama potentiometer (positional solo) as well as the corresponding volume control and headphones socket are also included in the studio monitor and talk back unit. When the headphones jack is inserted, the PFL speaker is muted.

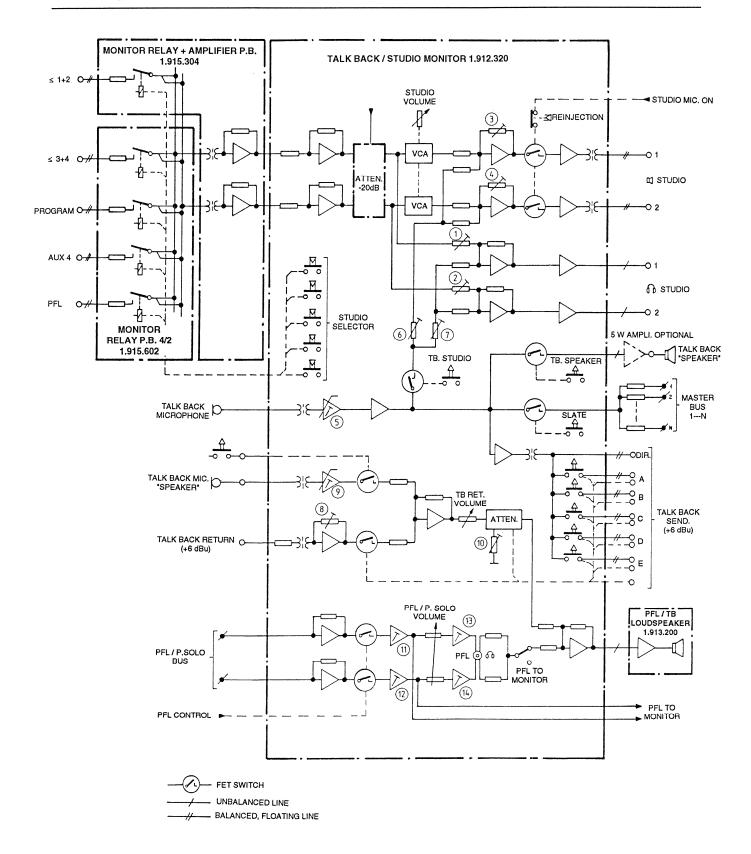
With the PFL/P.SOLO TO MONITOR button the PFL speaker is also muted. As soon as one or more PFL-and P.SOLO buttons have been pressed, the monitor signal is automatically disabled and the selected PFL or P.SOLO signal is connected to the monitor speakers. In this manner it is possible to monitor any group of input channels with the true stereo balance as adjusted with the panorama potentiometer.

A recording or broadcast in progress will not be affected. If all selected PFL/P.SOLO buttons have been reset by pressing the RESET button on the signalling module, the normal monitor signal can be heard.

(Also refer to block diagram PFL system)



Blockdiagramm / Block diagram

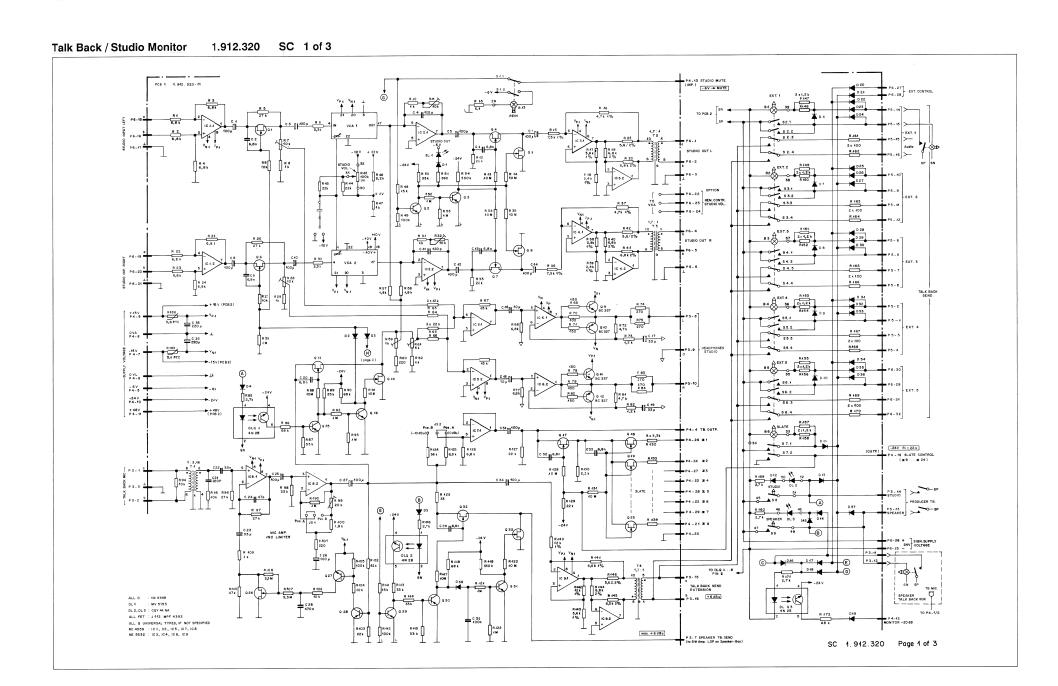


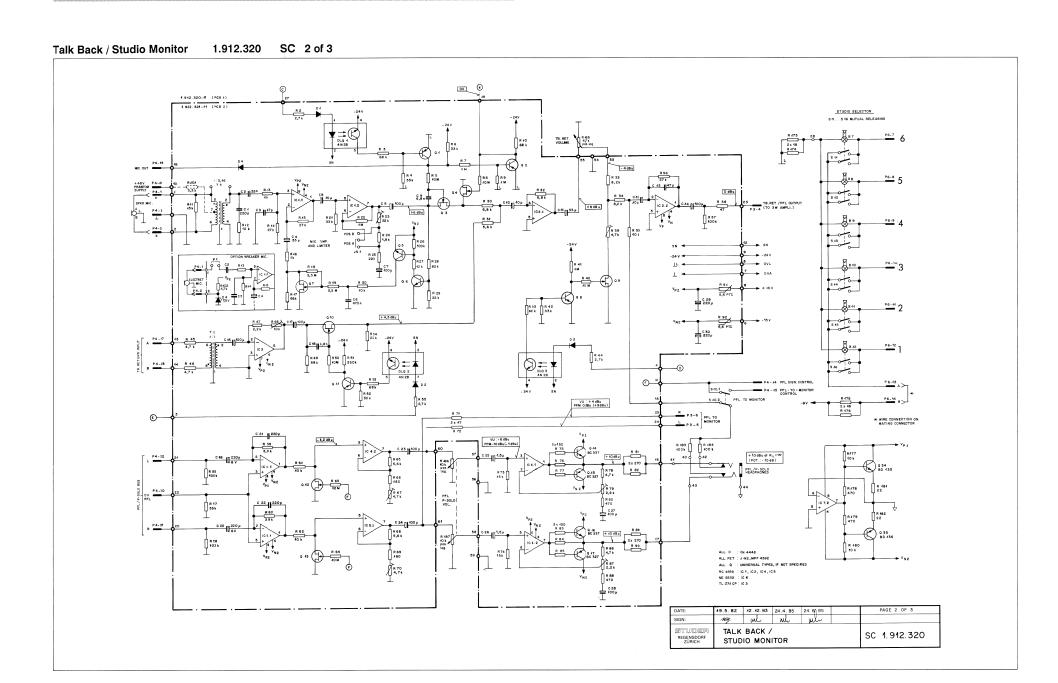
Abgleichelemente / Alignment Elements

Die Nummern beziehen sich auf das Blockdiagramm.

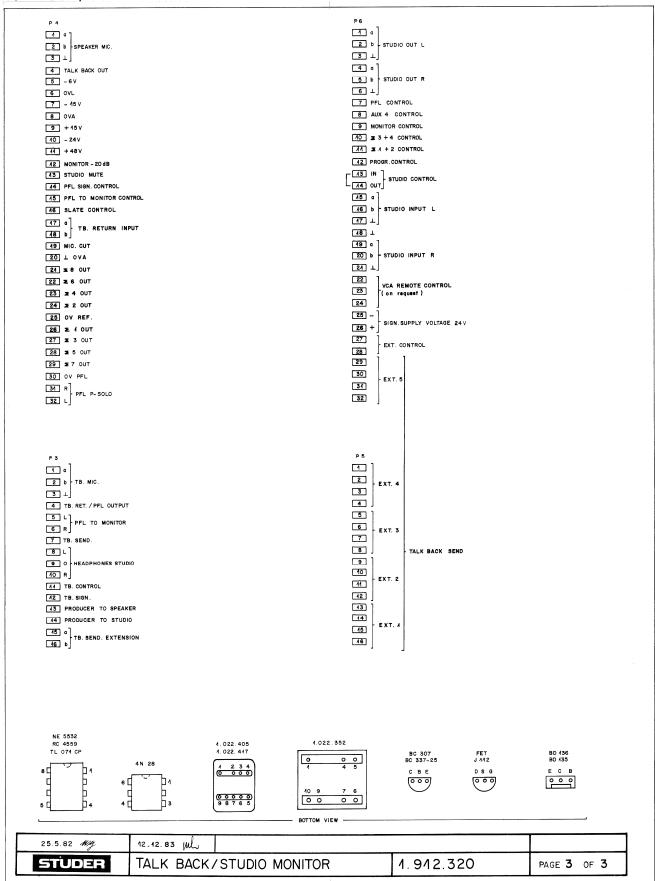
1 2 3 4 5 6 7 8 9	Ausgangspegel Studio-Kophhörer, links, Ausgangspegel Studio-Kophhörer, rechts Pegel Studioausgang, links Pegel Studioausgang, rechts Eingangspegel talk back mikro. Talk Back Pegel Studiolautsprecher Talk Back Pegel Studiokopfhörer Talk Back Return Pegel (Leitungseingang) Talk Back Return Pegel 'Speaker mikro.' Dämpfung Talk Back Return Pegel	R28 R11 R32 R99 R59 R61 R48 R23 R39
-		R39 R67 R70 R79

The numbers relate to the block diagram.





Talk Back / Studio Monitor 1.912.320 SC 3 of 3



Talk Back / Studio Monitor 1.912.320 1.040.022 - 24 24.46.3023 55.15.0123 1.912 . 320-01 1.912.320-02 21.01.2279 TALK BACK RETURN (4.942.321) (1.912.321) 42.01.0251 R186 /187 1.912.321-00 42.01.0286 24.04.2353 4.040.023-27 4.040.029-50 21.99.0117(3x) 1.912.320-03 1.912.320-41 1.912.310-05 PROGRAMME ≥ 1+2 ≥ 5+4 MONITOR AUX 4 PFL / P-SOLO EXT 4 (Pos.2) (Pos.4) TC MONITOR EXT 4 EXT 2 EXT 3 EXT 5 SLATE 1,912, 310-03 (2) Isolation Т 3 T 4 00 1831 - 1832 - 18 ● R18 ● R56 R6 R6 F627 F622 F641 1.022.400-03 1.010.048-27 43.01.0108 2 1.912.320-04 @ 4.010.127-65 (2x1 @ 28.99.0119 (···) Länge der Litzen (Pos.) = Pos. Nr. von KL 1.912.320-94 @ Q34,Q35 Montage und Montagematerial nach BV 632 12.12.83 A.Ho 👟 🔑 20.10.82 A.Ho 444 VF ① PL,LL,KL Talk Back / Studio Monitor ESE 1.912.320-00

SECTION 5

Talk Back / Studio Monitor 1.912.320

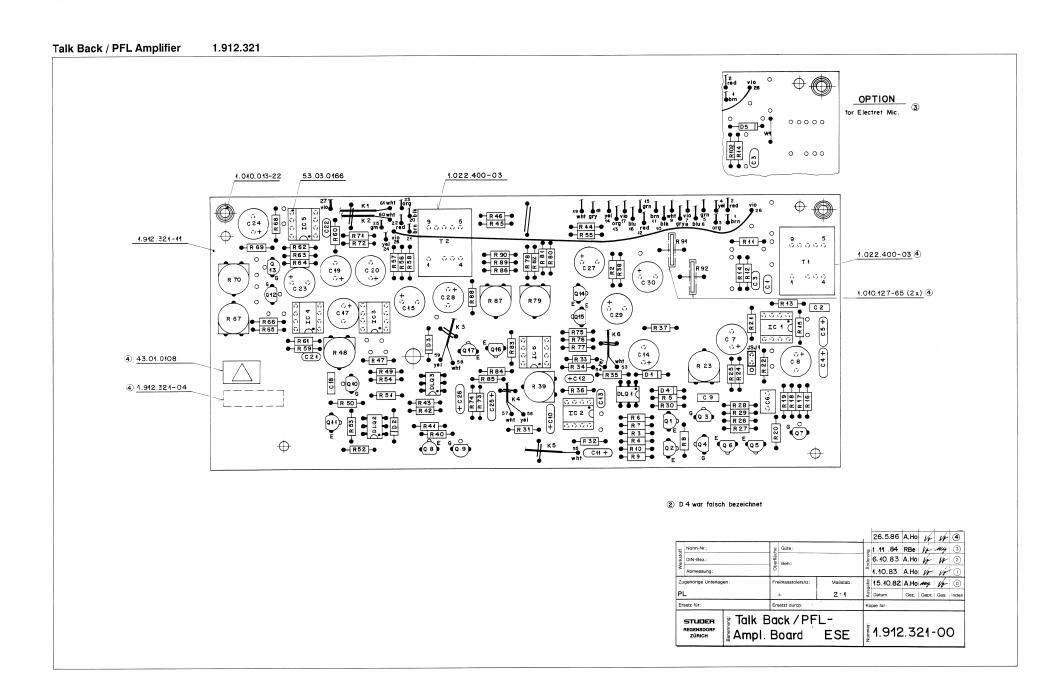
NO P		PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR		POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MF
-						1		50.03.0350	J-N-FET	J442 , MPF4392	
	-843	54.02.0444	6V, 30mA		\rightarrow	\vdash	Q1			JANZ , MPF 4392	S×,N
	1	59.22.47.07	عبر 100 F	EL /6V			02	50.03.0545	P-N-P		an
10	2	59.06.0682	6,8 nF	PE 40%	1 1		Q3	50.03.0545	P-N-P	*	an
	3	59.22.44.04	100 pcF	EL 16V			04	50.03.0350	J-N-FET	J442, NPF4332	Sx,
				CER 5%		-				1440 NDE ((200	
	4	59.34.442/	/120 pF		-	\vdash	05	50.03.0350	J-N-FET	J442, MPF 4392	Sx,N
10	5	59.22.410/	100,4F	EL 46V		_	Q6	50.03.0350	J-N-FET	JM2, MPF 4392	Sx,N
-10	6	59.06.0682	6,8 nF	PE 10%	1 1		07	50.03.0350	J-N-FET	J442, MPF 4392	S×,N
	7	59.22.44 04	100 JuF	EL 16V			98	50.03.0350	J-N-FET	J412, MPF4392	Sx,N
					_	\vdash					
	8	59.22.410/	100 MF	EL 16V		-	9(50,03,0340	N-P-N	BC337-25 or equivalent	an
- 10	9	59.06.0682	6,8 nF	PE 10%			ONC.	50.03.0354	P-N-P	BC327-25 or equivalent	au
T	10	59.22.44 0/	/100,4F	EL 16V			Q44	50.03.0340	N-P-N	BC337-25 or equivalent	an
	NE:						Q 12		P-N-P	BC327-25 or equivalent	Qи
		59.34.4/2/	420 pF	The state of the s		-		50,03.0354			
- 0	12	59.22.4404	100,nF	EL 16V		\vdash	Q13	50.03.0350	J=N-FET	J142, MPF4392	Sx,N
- 10	143	59.06.0682	6,8nF	PE 40%			Q14	50.03.0350	J-N-FET	J 4/12, MPF 4392	S×, N
1	214	59,22,44 04	100MF	EL 16V			045	50.03.0545	P-N-P	*	an
+		23122 H. 0.1	1100/11			-	0.46	E0020515	P-N-P	*	
-10	:45		-			-		50.03.0545	E-IV F		0,6
- 0	-16	59.26.2400	10 MF	SAL 16V			0.17				
10	.17	59.26.4330	33, F	SAL 40V	1 1		Q48	ll.			
							0.49				
	18	59.26.2400	10 µF		_	_					-
J	149	59.26.4330	33μF	SAL 10V		L	Q20				\perp
	20	59.06.0682	6,8nF	PE //0%			G24				T
					-			50020250	I-AL PER	J442 MPF4392	-
	21	59.34.4224	220pF	CER 5%	-	-	Q22	> 50.03.0350	J-N-FET	JANIZ MPT 433Z	Sx,N
10	22	59.06.0333	33nF	PE. 10%		L	023	II			
	23	59.26.4330	33uF	SAL ADV			Q24				1
						\vdash			1		+
	24	59.34.2470	47 pF		_	\vdash	Q25	H	-		+
-10	25	59.26.2400	Fعر 10	SAL 16V		L	026	ν			\perp
	26	59.22.4404	100 MF	FL //6V			027	50.03.03.40	N-P-N	*	Q.
										*	_
	27	59.22,4101	100 µF	EL 16V		-	028	50.03.05/15	P-N-P		Qu
- 10	28	59.06.0474	470nF	PE 40%		L	Q29	50.03,0545	P-N-P	*	ан
	29	59.06-0682	6/8nF	PE 40%			Q30	50.03.0545	P-N-P	*	a
Т.			D/D FIT	T L 71036		-			1		
D	DAT	E NAME				IND	DA'	TE NAME			
D			CER Ce	ramic	- 1	(4)			M Motor	ola	
D.			EL EN	ectrolytic	- 1	(3)			N Natio	nal	
ž+			-1			0					
37				yester	- 1		-		Sx Silicon		
	12.12.	83 Allo en	SAL Sol	id Aluminium Lacquered	- 1	10	12.12	1.83 ANO 100	* univers	sal type, β≥1160, Ucco≥140V	
יוכ											
1	08-04 TUD		k/Słudio M	tondor PL 4.9/2.320 PA	GE / OF /0	0	08-0 5TUE		/Studio Mo	nitor PL 1.312.320 PAGE	€ 3 OF
	OS-QU	ER Talk Bac	VALUE	SPECIFICATIONS/EQUIVALENT	GE / OF /0	G	POS NO	Talk Back	VALUE	SPECIFICATIONS/EQUIVALENT	MF
	08-04 (UD) (OS NO)	ER Talk Bac PART NO 59.06.04.04	VALUE 100nF	SPECIFICATIONS/EQUIVALENT		G	POS NO	PART NO 50.03.0545	VALUE P-N-P	SPECIFICATIONS/EQUIVALENT	MF Qu
	08-04 (UD) (08 NO) (30)	PART NO 59.06.04.04 59.22.44.04	100 nF	SPECIFICATIONS/EQUIVALENT PE		G	POS NO G.34 Q32	PART NO 50.03.0545 50.03.0350	P-N-P J-N-FET	specifications/equivalent # JM2, MPF 4392	MF Qu Sx,1
	08-04 (UD) (08 NO) (30)	ER Talk Bac PART NO 59.06.04.04	VALUE 100nF	SPECIFICATIONS/EQUIVALENT		G	POS NO	PART NO 50.03.0545	VALUE P-N-P	SPECIFICATIONS/EQUIVALENT	MF Qu Sx,1
	08-04 FUID (08 NO) (30 (34 (32	PART NO 59.06.04.04 59.22.44.04 59.06.06.82	100 MF 100 MF 5,8 MF	SPECIFICATIONS/EQUIVALENT PE		G	POS NO G.34 Q32 Q33	PART NO 50.03.0545 50.03.0350 50.03.0350	P-N-P J-N-FET J-N-FET	SPECIFICATIONS/EQUIVALENT # JM2, MPF 4392 JM2, MPF 4392	MF Qu Sx,I
S 100	08-04 TUID 03-00 03-0 03-1 03-2 03-3	PART NO 59.06.04.04 59.22.44.04 59.06.06.82 59.06.06.82	100nF 100nF 100nF 6,8nF 6,8nF	SPECIFICATIONS/EQUIVALENT PE /0% EL /6V PE /0% PE /0%		G	POS NO G.34 Q32 Q33 Q34	PART NO 50.03.0545 50.03.0350 50.03.0350 50.03.0495	P-N-P J-N-FET J-N-FET N-P-N	SPECIFICATIONS/EQUIVALENT # JM2, MPF 4392 JM2, MPF 4392 BD/35-46 or equivalent	MF Qu Sx,I Sx,I
	08-04 FUID 03.0 03.4 03.2 03.3 03.4	PART NO 59.06.04.04 59.22.44.04 59.06.0682 59.06.0682 59.22.44.04	100 nF 100 nF 100 nF 6,8 nF 6,8 nF 100 nF	\$PECIFICATIONS/EQUIVALENT PE		G	POS NO G.34 Q32 Q33	PART NO 50.03.0545 50.03.0350 50.03.0350	P-N-P J-N-FET J-N-FET	SPECIFICATIONS/EQUIVALENT # JM2, MPF 4392 JM2, MPF 4392	MF Qu Sx,I Sx,I
	08-04 TUID 03-00 03-0 03-1 03-2 03-3	PART NO 59.06.04.04 59.22.44.04 59.06.06.82 59.06.06.82	100 nF 100 nF 100 nF 6,8 nF 6,8 nF 100 nF	SPECIFICATIONS/EQUIVALENT PE /0% EL /6V PE /0% PE /0%		G	POS NO G.34 Q32 Q33 Q34	PART NO 50.03.0545 50.03.0350 50.03.0350 50.03.0435 50.03.0540	P-N-P J-N-FET J-N-FET N-P-N	# JM2, MPF 4382 JM2, MPF 4382 JM2, MPF 4382 BD 135-16 or equivalent BD 136-16 or equivalent	MF Qu Sx,I Sx,I
	08-04 FUID C30 C34 C32 C34 C34	PART NO 59.06.04.04 59.22.44.04 59.06.06.82 59.06.06.82 59.22.44.04 59.22.44.04	100 nF 100 nF 100 nF 5,8 nF 5,8 nF 100 nF	SPECIFICATIONS/EQUIVALENT		G	POS NO G.34 Q32 Q33 Q34 Q35	PART NO 50.03.0545 50.03.0350 50.03.0350 50.03.0435 50.03.0540	P-N-P J-N-FET J-N-FET N-P-N P-N-P	# JM2, MPF 4382 JM2, MPF 4382 JM2, MPF 4382 BD 135-16 or equivalent BD 136-16 or equivalent	MF Qu Sx,I Sx,I
	08-04 FUID 03.0 03.4 03.2 03.3 03.4	PART NO 59.06.04.04 59.22.44.04 59.06.0682 59.06.0682 59.22.44.04	100 nF 100 nF 100 nF 6,8 nF 6,8 nF 100 nF	\$PECIFICATIONS/EQUIVALENT PE		G	9 POS NO G.34 Q.32 Q.33 Q.34 Q.35	PART NO 50.03.0545 50.03.0550 50.03.0350 50.03.0495 50.03.0540 57.444682	VALUE P-N-P J-N-FET J-N-FET N-P-N P-N-P	## 4392 JM2_ MPF 4392 JM2_ MPF 4392 BD /35-76 or equivalent BD /36-76 or equivalent	MF Qu Sx,I Sx,I
	08-04 FUID C30 C34 C32 C34 C34	PART NO 59.06.04.04 59.22.44.04 59.06.06.82 59.06.06.82 59.22.44.04 59.22.44.04	100 nF 100 nF 100 nF 5,8 nF 5,8 nF 100 nF	SPECIFICATIONS/EQUIVALENT		G	9 POS NO G.34 Q.32 Q.33 Q.34 Q.35	Talk Back PART NO S0.03.0545 S0.03.0550 50.03.0350 50.03.0350 50.03.0495 57.444682	P-N-P J-N-FET J-N-FET N-P-N P-N-P	### JM2, MPF 4592 JM2, MPF 4592 JM2, MPF 4592 BD 435-46 or equivalent BD 436-46 or equivalent 23	MF Qu Sx,I Sx,I
	08-04 FUID C30 C34 C32 C34 C34	PART NO 59.06.04.04 59.22.44.04 59.06.06.82 59.06.06.82 59.22.44.04 59.22.44.04	100 nF 100 nF 100 nF 5,8 nF 5,8 nF 100 nF	SPECIFICATIONS/EQUIVALENT		G	9 POS NO G.34 Q.32 Q.33 Q.34 Q.35	PART NO 50.03.0545 50.03.0550 50.03.0350 50.03.0495 50.03.0540 57.444682	VALUE P-N-P J-N-FET J-N-FET N-P-N P-N-P	## 4392 JM2_ MPF 4392 JM2_ MPF 4392 BD /35-76 or equivalent BD /36-76 or equivalent	MF Qu Sx,I Sx,I
	08-04 FUID C30 C34 C32 C34 C34	PART NO 59.06.04.04 59.22.44.04 59.06.06.82 59.06.06.82 59.22.44.04 59.22.44.04	100 nF 100 nF 100 nF 5,8 nF 5,8 nF 100 nF	SPECIFICATIONS/EQUIVALENT		G	PPOS NO G 34 Q 32 Q 33 Q 34 Q 35 R 4 R 2 R 3	PART NO 50,03,0545 50,03,0350 50,03,0350 50,03,045 50,03,0495 50,03,0495 57,444682 57,444682	P-N-P J-N-FET J-N-FET N-P-N P-N-P 68k 6,8k 6,8k	### JM2, MPF 4592 JM2, MPF 4592 JM2, MPF 4592 BD 435-46 or equivalent BD 436-46 or equivalent 23	MF Qu Sx,I Sx,I
	08-04 FUID C30 C34 C32 C34 C34	PART NO 59.06.04.04 59.22.44.04 59.06.06.82 59.06.06.82 59.22.44.04 59.22.44.04	100 nF 100 nF 100 nF 5,8 nF 5,8 nF 100 nF	SPECIFICATIONS/EQUIVALENT		G	0.000 NO 0.33 0.33 0.33 0.35 R.4 R.2 R.3 R.4	PART NO 50.03.0545 50.03.0545 50.03.0350 50.03.0350 50.03.0350 50.03.0540 57.444682 57.444682 57.444682 57.444682	VALUE P-N-P J-N-FET J-N-FET N-P-N P-N-P 68k 6,8k 6,8k 6,8k	### ### ### ### ### ### ### ### ### ##	MF Qu Sx,I Sx,I
	08-04 (C30) (C30) (C32) (C32) (C33) (C34) (C35) (C36)	PART NO 59.06.04.04 59.22.44.04 59.22.44.04 59.06.06.22 59.06.06.2 59.02.44.04 59.22.42.24	100 MF 100 MF 100 MF 6,8 MF 6,8 MF 100 MF 220 MF 220 MF	STCHICATIONATIONVALINI PE 40% PE 40% PE 40% PE 40% PE 40% EL 45V EL 45V EL 45V		G	0.700 NO 0.34 0.32 0.33 0.34 0.35 R.4 R.2 R.3 R.4 R.5	PART NO S0.03.0545 S0.03.0545 S0.03.0350 S0.03.0350 S0.03.0495 S0.03.0495 S7.444682 S7.444682 S7.444682 S7.444682 S7.444682 S7.444682	VALUE P-N-P J-N-FET N-P-N P-N-P 68 k 6,8 k 6,8 k 6,8 k 27 k	### ### ### ### ### ### ### ### ### ##	MF Qu Sx,I Sx,I
	08-04 (C30) (C30) (C32) (C32) (C33) (C34) (C35) (C36)	PART NO 59.06.04.04 59.22.44.04 59.06.06.82 59.06.06.82 59.22.44.04 59.22.44.04	100 nF 100 nF 100 nF 5,8 nF 5,8 nF 100 nF	SPECIFICATIONS/EQUIVALENT		G	0.000 NO 0.33 0.33 0.33 0.35 R.4 R.2 R.3 R.4	PART NO 50.03.0545 50.03.0545 50.03.0350 50.03.0350 50.03.0350 50.03.0540 57.444682 57.444682 57.444682 57.444682	VALUE P-N-P J-N-FET J-N-FET N-P-N P-N-P 68k 6,8k 6,8k 6,8k	### ### ### ### ### ### ### ### ### ##	MF Qu Sx,I Sx,I
	08-04 FUID C30 C34 C32 C34 C34	PART NO 59.06.04.04 59.22.44.04 59.22.44.04 59.06.06.22 59.06.06.2 59.02.44.04 59.22.42.24	100 MF 100 MF 100 MF 6,8 MF 6,8 MF 100 MF 220 MF 220 MF	STCHICATIONATIONVALINI PE 40% PE 40% PE 40% PE 40% PE 40% EL 45V EL 45V EL 45V	MFR	G	POS NO G.34 G.32 G.33 G.35 R.4 R.2 R.3 R.4 R.5 R.6	PART NO \$0.03.0545 \$0.03.0545 \$0.03.0550 \$0.03.0350 \$0.03.0495 \$0.03.0495 \$0.03.0495 \$0.03.0495 \$7.444682 \$7.444682 \$7.444682 \$7.444682 \$7.444682 \$7.444682 \$7.444682 \$7.444682 \$7.444682 \$7.444682 \$7.444682	P-N-P J-N-FET J-N-FET N-P-N P-N-P 68k 68k 68k 68k 40 M	### July 2, MPF 4/392	MF Qu Sx,I Sx,I
	08-04 008 NO 0230 0234 0232 0233 0234 0235 0236	PART NO 59.06.04.04 59.22.44.04 59.06.0682 59.02.44.04 59.22.44.04 59.22.42.24 59.22.42.24	100 nF 100 nF 100 nF 6,8 nF 6,8 nF 100 nF 220 nF 220 nF	STCHICATIONATIONVALINI PE 40% PE 40% PE 40% PE 40% PE 40% PE 40% EL 45V EL 45V EL 45V Or equivalent	MFR	G	POS NO G.34 G.32 G.33 G.35 R.4 R.2 R.3 R.4 R.5 R.6 R.7	PART NO \$0.03.0545 \$0.03.0545 \$0.03.0350 \$0.03.0350 \$0.03.0350 \$0.03.045 \$0.03.045 \$5.444682 \$7.444682	P-N-P J-N-FET J-N-FET N-P-N P-N-P 68k 6,8k 6,8k 6,8k 6,9k 40 M	### 3492 3492	MF Qu Sx,I Sx,I
	08-04 08-04 03-04 03-03-03-03-03-03-03-03-03-03-03-03-03-0	FART NO 59.06.04.04 59.92.44.04 59.92.44.04 59.06.06.82 59.06.06.82 59.92.44.04 59.92.42.4 59.92.42.4 59.92.42.4 59.92.42.4 59.92.40.6	VALUE	#YESTICATIONECOUVALENT PE	MFR	G	Pros NO G.34 G.32 G.33 G.35 R.4 R.2 R.3 R.4 R.5 R.6 R.7	PART NO \$0.03.0545 \$0.03.0545 \$0.03.0545 \$0.03.0350 \$0.03.0350 \$0.03.0350 \$0.03.0540 \$5.03.0540 \$7.444682	VALUE P-N-P J-N-FET N-P-N P-N-P N-P-N P-N-P 6,8k 6,8k 6,8k 6,8k 4,0k 4,0k 4,0k	### July 2, MPF 4/392	MF Qu Sx,I Sx,I
	08-04 008 NO 0230 0234 0232 0233 0234 0235 0236	PART NO 59.06.04.04 59.22.44.04 59.06.0682 59.02.44.04 59.22.44.04 59.22.42.24 59.22.42.24	100 nF 100 nF 100 nF 6,8 nF 6,8 nF 100 nF 220 nF 220 nF	STCHICATIONATIONVALINI PE 40% PE 40% PE 40% PE 40% PE 40% PE 40% EL 45V EL 45V EL 45V Or equivalent	MFR	G	POS NO G.34 G.32 G.33 G.34 G.35 R.4 R.2 R.3 R.4 R.5 R.6 R.7	PART NO \$0.03.0545 \$0.03.0545 \$0.03.0350 \$0.03.0350 \$0.03.0350 \$0.03.045 \$0.03.045 \$5.444682 \$7.444682	P-N-P J-N-FET J-N-FET N-P-N P-N-P 68k 6,8k 6,8k 6,8k 6,9k 40 M	### July 2, MPF 4/392	MF Qu Sx,I Sx,I
	08-04 008 NO 030 034 032 033 034 035 036	FAIT NO 59.06.040年 59.06.040年 59.06.040年 59.06.0682 59.06.0682 59.06.0682 59.02.4404 59.02.4224 53.22.4224 53.22.4224	VALUE ./100 //F	PECIFICATIONSTOUVALENT PE AD3 EL A6V PE AD3 PE AD4 EL A6V EL A6V EL A6V EL A6V EL A6V EL A6V EL A6V EL A6V EL A6V EL A6V EL A6V EL A6V	MFR	G	Pros NO G.34 G.32 G.33 G.35 R.4 R.2 R.3 R.4 R.5 R.6 R.7 R.8 R.8 R.8 R.8	PART NO \$0.03.0545 \$0.03.0545 \$0.03.0545 \$0.03.055 \$0.03.0350 \$0.03.0350 \$0.03.0350 \$0.03.0455 \$0.03.0541 \$7.444.682 \$7.44.4682	VALUE P-N-P J-N-FET J-N-FET N-P-N P-N-P 6,8 k 6,8 k 6,8 k 4,0 M 4,0 k 3,3 k	### July 2, MPF 4/392	MF Qu Sx,I Sx,I
	08-04 08-04 03-04 03-03-03-03-03-03-03-03-03-03-03-03-03-0	FART NO 59.06.04.04 59.92.44.04 59.92.44.04 59.06.06.82 59.06.06.82 59.92.44.04 59.92.42.4 59.92.42.4 59.92.42.4 59.92.42.4 59.92.40.6	VALUE	#YESTICATIONECOUVALENT PE	MFR	G	Pros No G.34 Q32 Q33 Q34 Q35 R4 R2 R3 R4 R5 R6 R7 R8 R9 R40	PART NO \$0.03.0545 \$0.03.0545 \$0.03.0350 \$0.03.0350 \$0.03.0350 \$0.03.0540 \$5.03.0540 \$7.44.4682	VALUE P-N-P J-N-FET J-N-FET N-P-N P-N-P 68 k 6.8 k 6.8 k 6.8 k 4.0 M 4.0 k 4.1 k 3.3 k 4.1 k	### JM2 , MPF 4392 JM2 , MPF 4392 JM2 , MPF 4392 BD135-16 or equivalent BD135-16 or equivalent 23 24 24 40% Trim-Pot	MF Qu Sx,I Sx,I
	08-04 000 NO 003	FART NO 59.06.04 04 59.26.04 04 59.26.04 04 59.26.04 04 59.22.42 04 59.22.42 04 59.22.42 04 59.22.42 04 59.22.42 04 59.22.42 04 59.22.42 04 59.22.42 04 59.22.42 04 59.22.42 04 59.22.42 04 59.22.42 04 59.22.42 04 59.22.42 04	VALUE 100 NF 100 MF 100 MF 100 MF 100 MF 220 MF 220 MF 220 MF 220 MF 220 MF 220 MF 220 MF 220 MF 220 MF	### PECIFICATIONSTOUVALENT PE	Any Ms, CM T	G	0 POS NO G.34 Q32 Q33 Q34 Q35 R4 R2 R3 R4 R5 R6 R7 R8 R8 R9	PART NO \$0.03.0545 \$0.03.0545 \$0.03.0350 \$0.03.035	VALUE P-N-P J-N-FET J-N-FET N-P-N P-N-P 68 k 6.8 k 6.8 k 6.8 k 4.0 k 4.0 k 3.3 k 4.0 k	### July 2, MPF 4/392	MF Qu Sx,I Sx,I
	08-04 008 NO 030 034 032 033 034 035 036	FAIT NO 59.06.040年 59.06.040年 59.06.040年 59.06.0682 59.06.0682 59.06.0682 59.02.4404 59.02.4224 53.22.4224 53.22.4224	VALUE ./100 //F	PECIFICATIONSTOUVALENT PE AD3 EL A6V PE AD3 PE AD4 EL A6V EL A6V EL A6V EL A6V EL A6V EL A6V EL A6V EL A6V EL A6V EL A6V EL A6V EL A6V	MFR	G	Pros No G.34 Q32 Q33 Q34 Q35 R4 R2 R3 R4 R5 R6 R7 R8 R9 R40	PART NO \$0.03.0545 \$0.03.0545 \$0.03.0350 \$0.03.0350 \$0.03.0350 \$0.03.0540 \$5.03.0540 \$7.44.4682	VALUE P-N-P J-N-FET J-N-FET N-P-N P-N-P 68 k 6.8 k 6.8 k 6.8 k 4.0 M 4.0 k 4.1 k 3.3 k 4.1 k	### JM2 , MPF 4392 JM2 , MPF 4392 JM2 , MPF 4392 BD135-16 or equivalent BD135-16 or equivalent 23 24 24 40% Trim-Pot	MF Qu Sx,I Sx,I
	08-04 000 NO 000	PART NO 59.06.04 04 59.26.44 04 59.06.08 25 59.06.08 25 59.06.08 25 59.02.4204 59.22.4224 59.22.4224 59.00.4244 50.04.2425	VALUE	#*COTICATONECOUVALENT PE	any Ms,cM T T	G	Pros NO G 34 Q 32 Q 34 Q 35 R 4 R 5 R 6 R 7 R 8 R 9 R 44 R 54 R 44 R 54 R 64 R 7 R 64 R 7 R 64 R 7 R 8 R 8 R 8 R 8 R 8 R 8 R 8 R 8 R 8	PART NO \$0.03.0545 \$0.03.0545 \$0.03.0350 \$0.03.0350 \$0.03.0350 \$0.03.0510 \$7.444682 \$7.444682 \$7.44462	VALUE P-N-P J-N-FET J-N-FET N-P-N P-N-P 6,8 k 6,8 k 6,8 k 6,8 k 27 k 40 M 40 k 3,3 k 4 k 4,0 k 2,2 k	### JM2 , MPF 4392 JM2 , MPF 4392 JM2 , MPF 4392 BD135-16 or equivalent BD135-16 or equivalent 23 24 24 40% Trim-Pot	MF Qu Sx,I Sx,I
	08-04-05-05-05-05-05-05-05-05-05-05-05-05-05-	PART NO 590,664 04 590,664 04 590,664 04 590,664 04 590,666 82 590,666 82 590,666 82 590,666 82 590,240 45 590,240 45 590,240 45 590,240 45 590,400 45 590	VALUE 400 oF 400 oF 58 oF 400 oF 220 oF 220 oF 4N4448 MV5353 CQY4NNA CQY4NNA 4N26	#YESTEANONETOUVALENT PE ADS EL ASV PE ADW EL ASV EL ED SUB-MIN ASM EL ED SUB-MIN ASM EL ED SUB-MIN ASM EL EL ASV EL EL EL EL EL EL EL EL EL EL EL EL EL E	ANY MS,CM T T M,TI	G	Pros NO G 34 Q 32 Q 34 Q 35 R 4 R 5 R 6 R 7 R 8 R 9 R 9 R 44 R 64 R 64 R 64 R 64 R 64 R	PART NO \$0.03,0545 \$0.03,0545 \$0.03,0595 \$0.03,0395 \$0.03,0395 \$0.03,0495 \$0.03,0495 \$0.03,0495 \$0.03,0495 \$7.444682	VALUE P-N-P J-N-FET J-N-FET N-P-N P-N-P 688 6.88 6.88 27 k 40 M 40 k 4 k 3.38 4 k 40 k 40 k 40 k 40 k 40 k 40 k 40 k	### JM2 , MPF 4392 JM2 , MPF 4392 JM2 , MPF 4392 BD135-16 or equivalent BD135-16 or equivalent 23 24 24 40% Trim-Pot	MF Qu Sx,I Sx,I
	08-04 000 NO 000	PART NO 59.06.04 04 59.26.44 04 59.06.08 25 59.06.08 25 59.06.08 25 59.02.4204 59.22.4224 59.22.4224 59.00.4244 50.04.2425	VALUE	#*COTICATONECOUVALENT PE	any Ms,cM T T	G	0705 NO 034 (034 (035 (034 (035 (035 (035 (035 (035 (035 (035 (035	TOLK BOOK MAT NO 50030545 50030545 50030505 50030505 50030510 5744482 5744482 5744482 5744482 5744482 5744482 5744482 5744482 5744482 574482 574482 574482 574482 574482 574482	VALUE P-N-P J-N-FET J-N-FET N-P-N P-N-P 688 6,88 6,88 6,88 4,88 27 k 40 M 40 k 4 k 3,3 k 4 k 40 k 40 k 40 M 40 M 40 M	### DATE DESCRIPTION ### JM2, MPF 4992 JM2, MPF 4992 JM2, MPF 4992 DB155-16 or equivalent DB155-16 or equivalent DB155-16 or equivalent Z5	MF Qu Sx,I Sx,I
	08-04-05-05-05-05-05-05-05-05-05-05-05-05-05-	PART NO 590,664 04 590,664 04 590,664 04 590,664 04 590,666 82 590,666 82 590,666 82 590,666 82 590,240 45 590,240 45 590,240 45 590,240 45 590,400 45 590	VALUE 400 oF 400 oF 58 oF 400 oF 220 oF 220 oF 4N4448 MV5353 CQY4NNA CQY4NNA 4N26	#YESTEANONETOUVALENT PE ADS EL ASV PE ADW EL ASV EL ED SUB-MIN ASM EL ED SUB-MIN ASM EL ED SUB-MIN ASM EL EL ASV EL EL EL EL EL EL EL EL EL EL EL EL EL E	ANY MS,CM T T M,TI	G	Pros NO G 34 Q 32 Q 34 Q 35 R 4 R 5 R 6 R 7 R 8 R 9 R 9 R 44 R 64 R 64 R 64 R 64 R 64 R	PART NO \$0.03,0545 \$0.03,0545 \$0.03,0595 \$0.03,0395 \$0.03,0395 \$0.03,0495 \$0.03,0495 \$0.03,0495 \$0.03,0495 \$7.444682	VALUE P-N-P J-N-FET J-N-FET N-P-N P-N-P 688 6.88 6.88 27 k 40 M 40 k 4 k 3.38 4 k 40 k 40 k 40 k 40 k 40 k 40 k 40 k	### JM2 , MPF 4392 JM2 , MPF 4392 JM2 , MPF 4392 BD135-16 or equivalent BD135-16 or equivalent 23 24 24 40% Trim-Pot	MF Qu Sx,I Sx,I
Do	08-04-05-05-05-05-05-05-05-05-05-05-05-05-05-	TALE BOC PART NO 5906/010 59024/04 59024/04 59024/04 59024/04 59024/04 59024/04 59024/04 59024/04 59024/04 59024/04 59024/04 5004/04 5004/04 5004/04 5004/04 5004/04 5004/04 5004/04 5004/04 5004/04 5004/04 5004/04 5004/04	VALUE ADOME ADOME BOME ADOME YESTEANONETOUVALENT PE ADS EL ASV PE ADW EL ASV EL ED SUB-MIN ASM EL ED SUB-MIN ASM EL ED SUB-MIN ASM EL EL ASV EL EL EL EL EL EL EL EL EL EL EL EL EL E	MFR	G	0 POS NO G.34 Q.32 Q.33 Q.34 G.35 R.4 R.5 R.6 R.7 R.8 R.9 R.40 R.41 R.42 R.42 R.42 R.44 R.42 R.44 R.45	TAIL BOOK PART NO S.0.0230945 S.0.0230945 S.0.0230950	VALUE P-N-P J-N-FET J-N-FET J-N-FET N-P-N P-N-P 688 6.88 6.88 6.98 27 k 40 M 40 k 4 k 33k 4 k 40 k 42 k 40 M 40 k 40 M 40 M 40 M 40 M 40 M 40 M 40 M 40 M	### July 1, MPF 4/392	MF Qu Sx,I Sx,I	
	08-000 NO CO CO CO CO CO CO CO CO CO CO CO CO CO	TALE BOC PART NO 59 66/01 59 59 62/04/04 59 02/04/04 59 02/04/04 59 02/04/04 50 04/04/25 50 04/04/25 50 04/04/25 50 04/04/25 50 04/04/25 50 04/04/25 50 04/04/25 50 04/04/25 50 04/04/25 50 04/04/25 50 04/04/25 50 04/04/25	VALUE A00wF A00wF b8wF b8wF 220wF 220wF 220wF MN4448 MV5753 CQY44NA LQY44NA LYN26 4N26 RC4559	#YESTEANONETOUVALENT PE ADS EL ASV PE ADW EL ASV EL ED SUB-MIN ASM EL ED SUB-MIN ASM EL ED SUB-MIN ASM EL EL EL EL EL EL EL EL EL EL EL EL EL E	MFR	G	0705 NO 030 NO 0	TOLK BOOK FART NO 50030954 50030950 50030950 50030950 50030950 50030950 573,44482 57,44482 57,44482 57,44482 57,44482 57,44482 57,44482 57,44482 57,44482 57,44482 57,44482 57,44882	VALUE P-N-P J-N-FET N-P-N P-N-P 684 684 684 684 684 40 M 40 M 40 A 4 k 40 M 40 M 40 M 40 M 40 M 40 M 40 M 40 M	### Peter Peter ### 1992	MF Qu Sx,I Sx,I
	08-000 NO CO CO CO CO CO CO CO CO CO CO CO CO CO	TALK BOC PART NO 590,604 DE	МОДЕ НО МОДЕ НО МОДЕ НО МОДЕ НО МОДЕ НО МОДЕ 220Д Р 220Д 220Д	#*CETICATONECOUVALENT PE	MFR	G	D POS NO. G.344 G.35 R.4 R.2 R.3 R.4 R.5 R.6 R.7 R.8 R.9 R.40 R.41 R.41 R.41 R.41 R.41 R.41 R.41	Total Book PART 10 S.00230645 S.00230645 S.00230645 S.00230645 S.00230645 S.00230646 S.00230640 S.0023064	VALUE P-N-P J-N-FET J-N-FET J-N-FET N-P-N P-N-P 6,8 k 6,8 k 6,8 k 6,8 k 40 M 40 k 4 k 3,3 k 4 k 4,0 k 4,0 k 7,5 k 4,0 M 7,5 k 4,7 k 3,9 k	### JM2 , MPF 4/392 JM2 , MPF 4/392 JM2 , MPF 4/392 JM2 , MPF 4/392 JM2 , MPF 4/392 JM3	MF Qu Sx,I Sx,I
	08-000 NO CO CO CO CO CO CO CO CO CO CO CO CO CO	TALE BOC PART NO 59 66/01 59 59 62/04/04 59 02/04/04 59 02/04/04 59 02/04/04 50 04/04/25 50 04/04/25 50 04/04/25 50 04/04/25 50 04/04/25 50 04/04/25 50 04/04/25 50 04/04/25 50 04/04/25 50 04/04/25 50 04/04/25 50 04/04/25	VALUE A00wF A00wF b8wF b8wF 220wF 220wF 220wF MN4448 MV5753 CQY44NA LQY44NA LYN26 4N26 RC4559	#YESTEANONETOUVALENT PE ADS EL ASV PE ADW EL ASV EL ED SUB-MIN ASM EL ED SUB-MIN ASM EL ED SUB-MIN ASM EL EL EL EL EL EL EL EL EL EL EL EL EL E	MFR	G	0705 NO 030 NO 0	TOLK BOOK FART NO 50030954 50030950 50030950 50030950 50030950 50030950 573,44482 57,44482 57,44482 57,44482 57,44482 57,44482 57,44482 57,44482 57,44482 57,44482 57,44482 57,44882	VALUE P-N-P J-N-FET N-P-N P-N-P 684 684 684 684 684 40 M 40 M 40 A 4 k 40 M 40 M 40 M 40 M 40 M 40 M 40 M 40 M	### Peter Peter ### 1992	MF Qu Sx,I Sx,I
	08-04-05-05-05-05-05-05-05-05-05-05-05-05-05-	TALL BOC PART NO 590,600 H2 590,201 H0 590,600 H2 590,201 H0 590,600 H2 590,201 H0 590,	VALUE A00wF A00wF B8wF A00wF 220wF 220wF 220wF MN5753 CQY44NA 4N26 4N26 4N26 RC4559 RC4559	#*CONTROLOGY OF THE PROPERTY O	MFR	G	D POS NO. G.341 G.35 R4 G.35 R4 R5 R6 R7 R8 R9 R40 R44 R45 R44 R45 R44 R45 R44 R45	TOLK BOOK FART NO SOC30954 SOC30954 SOC30950 SOC309	VALUE P-N-P J-N-FET N-P-N P-N-P 684 6.84 6.84 6.84 6.98 274 40 M 40 k 48 338 44 40 M 40 k 40 k 40 k 40 k 40 k 40 k 40 k 40 k	### Potential State Potential State #### 1992	MF Qu Sx,I Sx,I
	08-04 030 030 030 032 033 034 035 036 000 000 000 000 000 000 000 000 000	TALE BOC PART NO 5906010 5906010 5906010 5906010 5906010 5906010 5906010 5906010 5906010 59021240 59021401 59021240 59021401	VALUE	#*CETICATONECOUVALENT PE	MFR ANY Ms, CM T T T M, T1 M, T1 M, T1 Pa, T1 Ca, T1 Si, Ex	G	DIPOS NO. G.341 G.324 G.35 R.4 R.2 R.3 R.4 R.5 R.6 R.7 R.8 R.6 R.7 R.8 R.7 R.8 R.7 R.8 R.7 R.8 R.7 R.8 R.7 R.8 R.7 R.8 R.7 R.8 R.7 R.8 R.7 R.8 R.8 R.7 R.8 R.8 R.8 R.8 R.8 R.8 R.8 R.8 R.8 R.8	Total Book NATION NATION SO 039045 SO 039045 SO 039045 SO 039045 SO 039045 SO 039045 SO 039045 SO 039045 SO 039045 SO 039045 SO 039046 SO 049046 SO 04	VALUE P-N-P J-N-FET N-P-N P-N-P 6.8 k 6.8 k 6.8 k 6.8 k 4.0 k 2.7 k 4.0 M 4.0 k 4.0 k 4.0 k 4.0 k 4.0 k 4.0 k 4.0 k 4.0 k 4.0 k 4.0 k 4.0 k 4.0 k 4.0 k 4.0 k 4.0 k 4.0 k 6.8 k	## JM2 , MPF 4/392 JM2 , MPF 4	MF Qu Sx,I Sx,I
	08-04-05-05-05-05-05-05-05-05-05-05-05-05-05-	TALL BOC PART NO 590,600 H2 590,201 H0 590,600 H2 590,201 H0 590,600 H2 590,201 H0 590,	VALUE A00wF A00wF B8wF A00wF 220wF 220wF 220wF MN5753 CQY44NA 4N26 4N26 4N26 RC4559 RC4559	#*CONTROLOGY OF THE PROPERTY O	MFR	G	D POS NO. G.341 G.35 R4 G.35 R4 R5 R6 R7 R8 R9 R40 R44 R45 R44 R45 R44 R45 R44 R45	TOLK BOOK FART NO SO030954 SO030950 SO0300950 SO03000000000000000000000000000000000	VALUE P-N-P J-N-FET N-P-N P-N-P 68 k 6.8 k 6.8 k 6.9 k 27 k 40 M 40 k 4 k 33 k 4 k 40 k 22 k 40 M 40 M 40 M 40 M 50 M 50 M 50 M 50 M 60 M 60 M 60 M 60 M 60 M 60 M 60 M 6	### Potential State Potential State #### 1992	MF Qu Sx,I Sx,I
D 0	08-04 03-04 03-04 03-05	FART NO 599,660 Hz Sec 2014 Oct 590,600 Hz Sec 2014 Oct 590,600 Hz Sec 2014 Oct 590,600 Hz Sec 2014 Oct 590,600 Hz Sec 2014 Oct 590,200 Hz Sec 2014 Oct 590,200 Hz Sec 2014 Oct 590,200 Hz Sec 2014 Oct 590,200 Hz Sec 2014 Oct 590,200 Hz Sec 2014 Oct 500,900 Hz Sec 2014 Oc	VALUE A004F A004F A004F B84F A004F 2204F 2204F AN4448 MV5F33 CQY44NA CQY44NA 4N26 4N26 4N26 4N26 RC4559 NE5532 NE5532	#**CFICATIONETOUVALIN' PE #25 EL #45 PE #03 PE #07 EL #5 EL	MFR AMY MS_CM T M_TI M_TI M_TI Ra_TI SiEx SiEx Ra_TI	G	6 TUDDO 6 TO NO 6 G.341 6 G.34 6 G.34 6 G.35 6 G.36	TOLK BOOK FART NO SO030954 SO030950 SO0300950 SO03000000000000000000000000000000000	VALUE P-N-P J-N-FET N-P-N P-N-P 6.8 k 6.8 k 6.8 k 6.8 k 4.0 k 2.7 k 4.0 M 4.0 k 4.0 k 4.0 k 4.0 k 4.0 k 4.0 k 4.0 k 4.0 k 4.0 k 4.0 k 4.0 k 4.0 k 4.0 k 4.0 k 4.0 k 4.0 k 6.8 k	## JM2 , MPF 4/392 JM2 , MPF 4	MF Qu Sx,I Sx,I
D 0	08-04 TUID COS NO C	TALE BOC PART NO 5906/010 5906/010 5906/010 5906/010 5906/010 5906/010 5906/010 5906/010 5906/010 5906/010 5902/010 59	VALUE AOOUF AOOUF AOOUF BRIF 220MF 220MF 220MF ANUHHR MV5753 CGY44NA CGY44NA LN26 HN26 RCH558 RCH558 RCH558 RCH558 RCH558 RCH558	#*CONTROLOGY OF THE PROPERTY O	MFR any Ms, CM T T M, T1 M, T1 Ra, T1 Ro, T1 Si, Ex Si, Ex Ra, T1 Si, Ex	G	Pros NO G.34 G.32 G.33 G.33 G.34 G.35 R.4 R.5 R.6 R.7 R.8 R.9 R.4 R.7 R.8 R.9 R.4 R.7 R.8 R.4 R.7 R.8 R.4 R.7 R.8 R.4 R.7 R.8 R.4 R.7 R.8 R.4 R.7 R.8 R.4 R.7 R.8 R.4 R.7 R.8 R.4 R.7 R.8 R.4 R.7 R.8 R.4 R.7 R.8 R.8 R.8 R.8 R.8 R.8 R.8 R.8 R.8 R.8	Tolk Book Tolk	VALUE P-N-P J-N-FET N-P-N P-N-P 684 684 684 684 684 404 406 414 334 414 407 406 407 407 407 407 407 407 407 407 407 407	## JM2 , MPF 4/392 JM2 , MPF 4/392 JM2 , MPF 4/392 JM2 , MPF 4/392 JM2 , MPF 4/392 JM2 , MPF 4/392 JM2 , MPF 4/392 JM2 , MPF 4/392 JM2 24	MF Qu Sx,I Sx,I
	08-04 03-06 03-06 03-06 03-06 03-06 03-06 03-06 03-06 03-06 03-06 03-06 03-06 03-06 06 06 06 06 06 06 06 06 06 06 06 06 0	FART NO	VALUE AOOUF AOOUF AOOUF BOOK AOOUF 220µF 220µF 220µF ANHHH8 MV5753 COYMANA HN26 HN26 RCL459 NE5532 RCL4559 RCL5532 RCH5532 RCH5532	#**CFICATIONETOUVALIN' PE #25 EL #45 PE #03 PE #07 EL #5 EL	MFR ANY MS, CM T M, T1 M, T1 R0, T1 Si, Ex F0, T1 Si, Ex R0, T1	G	D POS NO G 34 G 34 G 37 G 37 G 38 G 38 G 35 R 4 R 2 R 3 R 4 R 5 R 6 R 7 R 8 R 8 R 9 R 1 R 1 R 1 R 1 R 1 R 1 R 1 R 1 R 1 R 1	TALL BOOK FART TO SO(3)9645 SO(3)9645 SO(3)9650 SO(3)9650 SO(3)9650 SO(3)9650 SO(3)9660 SO(3)9600 SO	VALUE P-N-P J-N-FET J-N-FET N-P-N P-N-P P-N-P 6.8 k 6.8 k 6.8 k 6.9 k 4.0 M 40 k 4.1 k 3.3 k 4.0 k 2.2 k 4.0 M 4.0 M 4.0 M 5.5 k 6.8 k	### Post	MF Qu Sx,I Sx,I
	08-04 TUID COS NO C	TALE BOC PART NO 5906/010 5906/010 5906/010 5906/010 5906/010 5906/010 5906/010 5906/010 5906/010 5906/010 5902/010 59	VALUE AOOUF AOOUF AOOUF BRIF 220MF 220MF 220MF ANUHHR MV5753 CGY44NA CGY44NA LN26 HN26 RCH558 RCH558 RCH558 RCH558 RCH558 RCH558	#**CFICATIONETOUVALIN' PE #25 EL #45 PE #03 PE #07 EL #5 EL	MFR ANY MS, CM T M, T1 M, T1 R0, T1 Si, Ex F0, T1 Si, Ex R0, T1	G	Pros NO G.34 G.32 G.33 G.33 G.34 G.35 R.4 R.5 R.6 R.7 R.8 R.9 R.4 R.7 R.8 R.9 R.4 R.7 R.8 R.4 R.7 R.8 R.4 R.7 R.8 R.4 R.7 R.8 R.4 R.7 R.8 R.4 R.7 R.8 R.4 R.7 R.8 R.4 R.7 R.8 R.4 R.7 R.8 R.4 R.7 R.8 R.4 R.7 R.8 R.8 R.8 R.8 R.8 R.8 R.8 R.8 R.8 R.8	Tolk Book Tolk	VALUE P-N-P J-N-FET N-P-N P-N-P 684 684 684 684 684 404 406 414 334 414 407 406 407 407 407 407 407 407 407 407 407 407	## JM2 , MPF 4/392	MF Qu Sx,I Sx,I
	08-04 03-04 03-04 03-04 03-05 03-05 03-05 03-05 03-05 03-05 03-05 05 05 05 05 05 05 05 05 05 05 05 05 0	TALK BOC PART NO 5906040 5906040 5906040 59024404 59060482 59024404 59024040 59024040 59024040 59024040 59024040 59024040 59024040 59024040 59024040 5004241 5004241 5004241 50042040 5004040 50080403 50080403 50080405 50080405 50080406	MUUE AOOMF AOOMF AOOMF BRAF 220MF 220MF 220MF MV5753 COYMANA COYMANA LN26 HN26 HN26 RCU559 RCU559 RCU559 RCU558 RCU558 RCU558 RCU558 RCU558 RCU558 RCU558 RCU558 RCU558 RCU558	#*COTICATIONECOUVALENT PE	MFR Any Ms, CM T T M, T1 M, T1 Ro, T1 Si.Ex Si.Ex Ro, T1 Si.Ex Ro, T1 Si.Ex Ro, T1	G	D POS NO. D POS NO.	Totk Book Totk Book Totk Book Totk Book Totk Book Totk Book Totk Book Totk Book Totk Book Totk Book Totk Book Totk Book Book Book Book Book Book Book B	VALUE D-N-P J-N-FET N-P-N 1-N-FET N-P-N 1-N-FET N-P-N 484 6.84 6.84 6.84 6.84 6.84 6.84 6.84	## JM2 , MPF 4/392	MF Qu Sx,I Sx,I
	08-04 03-04 03-04 03-05	TALL BOC PART NO 599,66/10 (1) (2) (2) (2) (2) (2) (2) (2) (2) (2) (2	VALUE AOOUF AOOUF AOOUF BOOK AOOUF 220µF 220µF 220µF ANHHH8 MV5753 COYMANA HN26 HN26 RCL459 NE5532 RCL4559 RCL5532 RCH5532 RCH5532	#**CFICATIONETOUVALIN' PE #25 EL #45 PE #03 PE #07 EL #5 EL	MFR ANY MS, CM T M, T1 M, T1 R0, T1 Si, Ex F0, T1 Si, Ex R0, T1	INC	PI POS NO. Q 34 Q 32 Q 33 Q 34 Q 35 Q 36 Q 36 Q 36 Q 36 Q 36 Q 36 Q 36	TARE BOX SOCIETY TO THE BOX SOCI	VALUE P-N-P J-N-FET J-N-FET N-P-N P-N-P P-N-P 6.8 k 6.8 k 6.8 k 6.9 k 4.0 M 40 k 4.1 k 3.3 k 4.0 k 2.2 k 4.0 M 4.0 M 4.0 M 5.5 k 6.8 k	### Post	MF Qu Sx,I Sx,I
	08-04 03-04 03-04 03-04 03-05 03-05 03-05 03-05 03-05 03-05 03-05 05 05 05 05 05 05 05 05 05 05 05 05 0	TALL BOC PART NO 599,66/10 (1) (2) (2) (2) (2) (2) (2) (2) (2) (2) (2	MUH 100 H 100 M 10	#*COTICATIONECOUVALENT PE	MFR Any Ms, CM T T M, T1 M, T1 Ro, T1 Si.Ex Si.Ex Ro, T1 Si.Ex Ro, T1 Si.Ex Ro, T1	G	PI POS NO. Q 34 Q 32 Q 33 Q 34 Q 35 Q 36 Q 36 Q 36 Q 36 Q 36 Q 36 Q 36	TARE BOX SOCIETY TO THE BOX SOCI	VALUE D-N-P J-N-FET N-P-N 1-N-FET N-P-N 1-N-FET N-P-N 6,8k 6,8k 6,8k 6,8k 6,8k 1,8k 1,8k 1,8k 1,8k 1,8k 1,8k 1,8k 1	## JM2 , MPF 4/392	MF Qu Sx,I Sx,I
D I	08-04 03-04 03-04 03-05	TALL BOC PART NO 599,66/10 (1) (2) (2) (2) (2) (2) (2) (2) (2) (2) (2	MAUR AOOMF AOOMF AOOMF BBMF AOOMF 220MF 220MF 220MF MV5753 COYMANA COYMANA LN26 HN26 HN26 HN26 RC4559 RC4559 RC4559 RC4559 RC4559 RC4559 RC4559 RC4559	######################################	MFR Any Ms, CM T T M, T1 M, T1 Ro, T1 Si.Ex Si.Ex Ro, T1 Si.Ex Ro, T1 Si.Ex Ro, T1	S	0 Pros NO G 34 G 34 G 32 G 33 G 33 G 33 G 34 G 35 R4 R5 R6 R7 R8 R8 R9 R40 R40 R41 R45 R45 R45 R46 R47 R46 R46 R47 R46 R46 R46 R46 R46 R46 R46 R46 R46 R46	TARE BOX SOCIETY TO THE BOX SOCI	VALUE D-N-P J-N-FET N-P-N 1-N-FET N-P-N 1-N-FET N-P-N 6,8k 6,8k 6,8k 6,8k 6,8k 1,8k 1,8k 1,8k 1,8k 1,8k 1,8k 1,8k 1	## JM2 , MPF 4/392	MF Qu Sx,I Sx,I
	08-04 03-04 03-04 03-05	TALL BOC PART NO 599,66/10 (1) (2) (2) (2) (2) (2) (2) (2) (2) (2) (2	MULE 400 ME 400 ME 6.8 MF 6.8 MF 6.8 MF 220 MF 220 MF 220 MF 220 MF 40 MV 6153 40 MV 6160 40 MV 616	######################################	MFR Any Ms, CM T T M, T1 M, T1 Ro, T1 Si.Ex Si.Ex Ro, T1 Si.Ex Ro, T1 Si.Ex Ro, T1	INC	Pros NO Q 34 Q 32 Q 33 Q 34 Q 35 R4 R5 R6 R7 R8 R8 R8 R9 R40 R41 R45 R42 R43 R44 R45 R44 R45 R44 R47 R48 R49 R40 R44 R44 R45 R44 R45 R45 R46 R47 R46 R47 R46 R47 R46 R47 R46 R46 R46 R46 R46 R47 R46 R46 R46 R46 R46 R46 R46 R46 R46 R46	TARE BOX SOCIETY TO THE BOX SOCI	VALUE D-N-P J-N-FET N-P-N 1-N-FET N-P-N 1-N-FET N-P-N 6,8k 6,8k 6,8k 6,8k 6,8k 1,8k 1,8k 1,8k 1,8k 1,8k 1,8k 1,8k 1	## JM2 , MPF 4/392	MF Qu Sx,I Sx,I
	08-04 03-04 03-04 03-05	TALL BOC PART NO 599,66/10 (1) (2) (2) (2) (2) (2) (2) (2) (2) (2) (2	MAUR AOOMF AOOMF AOOMF BBMF AOOMF 220MF 220MF 220MF MV5753 COYMANA COYMANA LN26 HN26 HN26 HN26 RC4559 RC4559 RC4559 RC4559 RC4559 RC4559 RC4559 RC4559	######################################	MFR Any Ms, CM T T M, T1 M, T1 Ro, T1 Si.Ex Si.Ex Ro, T1 Si.Ex Ro, T1 Si.Ex Ro, T1	INCC	0 Pros NO 0 G.34 0 232 0 233 0 234 0 235 R4 R5 R6 R7 R8 R9 R40 R41 R42 R42 R43 R44 R45 R46 R47 R48 R47 R48 R49 R40 R41 R41 R42 R43 R44 R45 R44 R45 R46 R47 R48 R49 R49 R40 R40 R40 R40 R40 R40 R40 R40	TARE BOX SOCIETY TO THE BOX SOCI	VALUE D-N-P J-N-FET N-P-N 1-N-FET N-P-N 1-N-FET N-P-N 6,8k 6,8k 6,8k 6,8k 6,8k 1,8k 1,8k 1,8k 1,8k 1,8k 1,8k 1,8k 1	## JM2 , MPF 4/392	MF Qu Sx,I Sx,I
	08-04 03-04 03-04 03-05	TALL BOC PART NO 599,66/10 (1) (2) (2) (2) (2) (2) (2) (2) (2) (2) (2	MULE 400 ME 400 ME 6.8 MF 6.8 MF 6.8 MF 220 MF 220 MF 220 MF 220 MF 40 MV 6153 40 MV 6160 40 MV 616	######################################	MFR Any Ms, CM T T M, T1 M, T1 Ro, T1 Si.Ex Si.Ex Ro, T1 Si.Ex Ro, T1 Si.Ex Ro, T1	INC	0 Pros NO 0 G.34 0 232 0 233 0 234 0 235 R4 R5 R6 R7 R8 R9 R40 R41 R41 R42 R43 R44 R45 R46 R47 R48 R47 R48 R49 R40 R41 R41 R41 R42 R43 R44 R45 R46 R47 R48 R49 R40 R40 R40 R40 R40 R40 R40 R40	TARE BOX SOCIETY TO THE BOX SOCI	VALUE D-N-P J-N-FET N-P-N 1-N-FET N-P-N 1-N-FET N-P-N 6,8k 6,8k 6,8k 6,8k 6,8k 1,8k 1,8k 1,8k 1,8k 1,8k 1,8k 1,8k 1	## JM2 , MPF 4/392	Sx,1 Sx,1 Sx,1
	08-04 09-04	FART NO	MULE 400 ME 6.8 MF 6.8 MF 6.8 MF 220	######################################	MFR Any Ms, CM T T M, T1 M, T1 Ro, T1 Si.Ex Si.Ex Ro, T1 Si.Ex Ro, T1 Si.Ex Ro, T1	INCC.	0706 NO NO NO NO NO NO NO NO NO NO NO NO NO	TATE BOOK SOLUTION TO THE BOOK	VALUE D-N-P J-N-FET N-P-N 1-N-FET N-P-N 1-N-FET N-P-N 6,8k 6,8k 6,8k 6,8k 6,8k 1,8k 1,8k 1,8k 1,8k 1,8k 1,8k 1,8k 1	## JM2 , MPF 4/392	Sx,1 Sx,1 Sx,1
	08-04 005 NO 005	Talk Soc	MUH 1/10 MF 1/	### STATE OF THE PROPERTY OF T	MFR Any Ms, CM T T M, T1 M, T1 Ro, T1 Si.Ex Si.Ex Ro, T1 Si.Ex Ro, T1 Si.Ex Ro, T1	INC INC INC INC INC INC INC INC	R4	Tolk Book FART NO S0020954 S0020954 S0020954 S0020955 S0020055	VALUE D-N-P J-N-FET N-P-N 1-N-FET N-P-N 1-N-FET N-P-N 6,8k 6,8k 6,8k 6,8k 6,8k 1,8k 1,8k 1,8k 1,8k 1,8k 1,8k 1,8k 1	## JM2 , MPF 4/392	E 3 OF
	08-04 09-04	Talk Soc	MULE 400 ME 6.8 MF 6.8 MF 6.8 MF 220	### STATE OF THE PROPERTY OF T	MFR Any Ms, CM T T M, T1 M, T1 Ro, T1 Si.Ex Si.Ex Ro, T1 Si.Ex Ro, T1 Si.Ex Ro, T1	INC INC INC INC INC INC INC INC	0706 NO NO NO NO NO NO NO NO NO NO NO NO NO	Tolk Book FART NO S0020954 S0020954 S0020954 S0020955 S0020055	VALUE D-N-P J-N-FET N-P-N 1-N-FET N-P-N 1-N-FET N-P-N 6,8k 6,8k 6,8k 6,8k 6,8k 1,8k 1,8k 1,8k 1,8k 1,8k 1,8k 1,8k 1	## JM2 , MPF 4/392	Sx,1 Sx,1 Sx,1

D POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR	IND POS NO	PART NO	VALUE	SPECIFICATIO	NS/EQUIVALENT	MFR
R25	57.44.4682	68k	2%	-	R85	57.44.4272	2,7k			
R26	57,44.4273	27 k		_	R86	57.44.4683	68 k 33 k			
P27	57,44.54.06	40 M	44. Tel. 914	-	R87	57.44.4333	40 M			
R28	58.04.84.03 57.44.44.02	10 k	40% Trim Pot.		R88	57,44,6406 57,44.4333	33 k			_
R30	57.44.4332	3,3 k		1	R90	57.44.4683	68 k			_
R3/1	57./1/4/102	1 k			R94	57.11.61.06	40 M			
R32	58,04.84.03	40 k	40% Trim-Pot.		R92	57.44.44.05	4 M			
P33	57.444223	22 k			R93	57.44.4405	A M			
R34	57,44,6406	40 M			R94	57.44.44.03	/10k			
R35	57,44,64.06	40 M			R95	57.44.44.63	40 k			
R36	57.44.37 52	7,5 k	4%		R96	57.44.4273	27 k			
R37	57.44.3472	4,7 k	A%		R97	57.44.4273	27 k			
R38	57.44.3392	3,9 k	4%		R98	57.11.4104	/00k			
R39	57.44.3242	2,4k	4%		R99	58.04.82.03	20 k	40% Tri	m-Pot	
R40	57.11.4682	6,8 k	2%		R400	57,44.4482	1,8k			
R44	57.44.4682	6,8 k	2%		R101	57.44.4224	220			
R42	57.44.4569	5,6	2%	\perp	R402	57,44.4823	82 k			
R43	57.44.4223	22 k		\perp	R403	57.44.4223	22 k			
R44	57.44.4223	22 k		\perp	R/104	57.44.4403	/0 k			
R45	4.942.004.23	100k	lin. Pot. (Volume)	\perp	R405	57.44.44 04	/00 k			
R46	57.44.4822	8,2k	2%	\perp	R406	57.44.4403	10 k			
R47-	57.11.4102	1k	2%	\perp	R407	57.44.6335	3,3 M			-
R48	57.44.4453	15k		+	R408	57.44.6335	3,3 M			
R49	57.11,4104	100k		+	R409	57.11.4102	1 k			-
R50	57.44.4333	33 k		+	R440	57.44.4683	68 k			+
R54	57.44.4394	390		+	R444	57.44.4453	/5k			-
R52	57.44.4405	/M		+	R/1/2	57.44.4404	400 k			-
R53	57.444405	1M		+	R443	57.44.4333	33 k			+-
R54	57.11.4334	330k			R414	57.44.4333	33k			
D DAT	E NAME				(4) DAT	E NAME				
4-		1			3					
		1								
					2	0.7 4.0 40				
12.12.					① 12.42					
					2	-82 <i>N</i> ly				
12.12.	1-82 My	/Studio Mo	initor PL 1.912.320 PAGE	5 OF /10	① 12.42	-82 <i>My</i>	/Studio 1	donitor PL 1.9	12.320 PA	GE 7 OF 40
08-04	1-82 My	/Studio Mo		5 o F /10	0 12.42 0 08-0/ STUD	-82 My ER Talk Back				
) 12.12.) 08-0/ STUD	1-82 My	/Studio Mo	initor PL 1.912.320 PAGE SPECIFICATIONS/EQUIVALENT	5 OF 40	① 12.42 ○ 08-0/ STUD	-82 My ER Talk Back PART NO	VALUE		12320 pp	.ge 7 OF 40
08-04	1-82 <i>My</i> ER Talk Back	VALUE 6,8			① 12.12 ○ 08-0/ STUD	- 82 My ER Talk Back PART NO 57.11,4333	VALUE 33 k			
) 12.12.) 08-0/ STUD D POS NO	1-82 MM IER Talk Back PART NO	VALUE			② ① 42.42 ○ 08-0/ STUD INDI POS NO R445 R446	- 82 My ER Talk Back PART NO 57.44,4333 57.44.42*2	VALUE 33 k 2/7 k			
0 12.12. 08-0/ STUD POS NO R55 R56 R57	1-82 My ER Talk Back PART NO 57.41.4689 57.44.405 57.44.482	VALUE 6,8	SPECIFICATIONS/EQUIVALENT		(2) (12.42) (10.42) (10.42) (10.44) (10.44)	-82 My Talk Back PART NO 57.44,4333 57,44.42*2 57.44.6406	33 k 2/7 k 40 M			
0 12.12. 08-0/ 5TUD POS NO R55 R56 R57 R58	1-82 MM ER Talk Back PART NO 57.44.4689 57.44.4405 57.44.4482 57.44.4482	6,8 1 M 1,8 k	SPECIFICATIONS/EQUIVALENT		(2) 12.42 (2) 08-0/ (8) TUD (10) POS NO (14) R445 (14) R447 (14) R448	-82 My FART NO 57.44,4333 57.44.4212 57.44.6406 57.44.4683	733 k 2,7 k 40 M 68 k			
0 12.12. 08-0/ STUD POS NO R55 R56 R57 R58 R59	1-82 MM (EIR) Talk Back PART NO 57.41.4689 57.41.4105 57.41.4182 57.41.4182 58.04.3102	0,8 1 M 1,8 k 1,8 k 1,8 k	SPECIFICATIONS/EQUIVALENT		(2) 12.42 (2) 08-0/ (8) TUD (8) R445 (8) R446 (8) R447 (8) R448 (8) R449	-82 My Talk Back PART NO 57.41.4333 57.41.4212 57.41.6406 57.41.4683 57.41.4334	73 k 2/7 k 40 M 68 k 330k			
0 12.12. 0 08-04 STUD 0 POS NO R55 R56 R57 R58 R59 R60	1-82 MM ER Talk Back PART NO 57.44.4689 57.44.4405 57.44.4482 57.44.4482	4,8 k 4,8 k 4,8 k 4,8 k 4 k	specifications/equivalent 23 23 40 3 Trim-Pot.		(3) 42.42 (0) 42.42 (0) 68-0/ (8) TUD (1) MD POS NO (R445) (R446) (R447) (R449) (R449) (R420)	-82 My Talk Back PART NO 57.44,4333 57.44,4272 57.44,606 57.44,4683 57.44,4334 57.44,6406	VALUE 33 k 2,7 k 40 M 68 k 330k			
0 12.12. 08-07 5TUD 08-07 855 855 856 857 858 859 860 864	1-82 MM Talk Back PART NO 57.44.4689 57.44.4482 57.44.4482 57.44.4482 58.04.3402 57.44.4224 58.04.3502	### VALUE 6,8 4,8 4,8 4,8 4,8 5,8	SPECIFICATIONS/EQUIVALENT		(1) 12.42 (1) 42.42 (1) 08-0/ (8) TUD (8) R445 (8) R446 (8) R447 (8) R449 (8) R420 (8) R420	-82 My FART NO 57.41,4333 57.44.4212 57.44.6406 57.44.4683 57.44.4334 57.44.6406 57.44.4405	33 k 2,7 k 40 M 68 k 330k 40 M			
) 12.12.) 08-0/) 08-0/) 08-0/ R55 R56 R57 R58 R59 R60 R64 R62	1-82 Meg EIR Talk Back PART NO 57.44.4689 57.44.4405 57.44.4182 57.44.4182 58.04.3402 57.44.224 58.04.3502 57.44.402	### VALUE 6,8 4,8 k 4,8 k 4 k 220 5 k 4 k	PECIFICATIONS/TOURVALENT 24 25 40 5 Trim-Pot. 400 Trim-Pot.		(1) 42.42 (1) 42.42 (1) 68-9/ (8) 700 (8) 700	-82 My FART NO 57.44,433 57.44.42*2 57.44.6406 57.44.4683 57.44.4683 57.44.4105 57.44.4405	33 k 2,7 k 40 M 68 k 330k 40 M 4 M			
12.12. 08-0/ 50 08-0/ 50 08-0/ 50 08-0/ 50 08-0/ 855 856 857 858 859 860 864 862 863	1-82 My Talk Back PART NO 57.44.14689 57.44.1405 57.44.1482 58.04.4702 57.44.1402 57.44.1402 57.44.1402	/ VALUE 6/8 /1 M /1/8 k /1/8 k			① 12.12 ○ 08-0/ STUD IND POS NO R445 R446 R447 R449 R420 R420 R421 R423	- 82 My Talk Bock 57.44.4333 57.44.4212 57.44.6406 57.44.4683 57.44.4634 57.44.4056 57.44.4056 57.44.4055 57.44.4055 57.44.4055	33 k 2,7 k 40 M 68 k 330k 40 M 4 M 33	SPECIFICATI		
12.12. 08-0/ 50 08-0/ 50 08-0/ 50 08-0/ 50 08-0/ 855 856 857 858 859 860 864 862 863 864	1-82 // Talk Back PART NO 57.44.4689 57.44.4689 57.44.4182 57.44.4182 58.048.02 57.44.423 57.44.423	## VALUE 6/8 4 M 4/8 k 4/8 k 4 k 220 5 k 4 k 5 k 4 k 4 k 4 k 4 k 5 k 4 k 4 k 4 k 4 k 4 k 4 k 4 k 5 k 4 k 4 k 4 k 5 k 6 k 6 k 7 k 7 k 7 k 8 k 9 k	### SPECIFICATIONS/TOURVALENT 24		① 12.42 ○ 08-0/ STUD R445 R447 R448 R449 R420 R421 R422 R423 R423	PART NO 57.44,4333 57.44,4233 57.44,4232 57.44,405 57.44,405 57.44,4405 57.44,4405 57.44,4405 57.44,4405 57.44,4405 57.44,4405 57.44,4405 57.44,4405 57.44,4330 57.44,330	33 k 2,7k 40 M 68 k 330k 40 M 4 M 33 36 k	SPECIFICATI		
0 12.12. 0 08-00 5TUID R55 R56 R57 R58 R59 R64 R62 R63 R64 R62	1-82 MM TOIK BOCK PART NO 57-44-1629 57-44-1482 57-44-1482 57-44-1482 57-44-1482 57-44-1482 57-44-1482 57-44-1482 57-44-1482 57-44-1482 57-44-1482 57-44-1482 57-44-1482	VALUE 6,8 4 M 4,8 k 4,8 k 4 k 220 5 k 4 k 42 k 42 k 22 k			12. 12 12 12 12 12 12 12	-82 Aug Talk Bock PART NO 57.44.4333 57.44.4212 57.44.6406 57.44.405 57.44.405 57.44.405 57.44.405 57.44.405 57.44.405 57.44.405 57.44.405 57.44.405 57.44.405	27k 27k 40 M 68 k 330k 40 M 4 M 4 M 33 36 k 6.8 k	\$PEGFICATI		
0 12.12. 0 08-00 5TUID R55 R56 R57 R58 R59 R60 R60 R62 R63 R64 R65 R65	1-82 MBF Talk Back PART NO 57.4M+689 57.4M+405 57.4M+482 57.4M+482 57.4M+482 57.4M+482 57.4M+423 57.4M+423 57.4M+423 57.4M+423	## VALUE 6,8 4 M 4,8 k 4 k 220 5 k 4 k 42 k 42 k 42 k 22 k	### Pot.		10 12.12 0 12.12 0 18-02 STUD STUD RMS RMS RMS RMS RMS RMS RMS RMS	-82	23 k 2/7 k 40 M 68 k 330k 40 M 4 M 33 36 k 6.8 k	SPECIFICATI		
D POS NO. R55. R56. R59. R60. R64. R62. R65. R65. R65. R65. R65. R66. R65. R66. R65. R66. R65. R66. R65. R66. R65. R66. R65. R66. R67.	1-82 PART NO 57.441-68 9 57.441-40 5 57.441-40 5 57.441-40 2 57.441-40 2 57.441-40 2 57.441-40 2 57.441-40 2 57.441-40 2 57.441-20 57.44	6,8 4 M 4,8 k 4,8 k 4 k 220 5 k 4 k 42 k 42 k 42 k 42 k 42 k 42 k 42			3 12.12 12.00 12.12 12.00 12.12 12.00 12.12 12.00 12.0	- 62	33 k 2,7 k 40 M 68 k 330k 40 M 4 M 33 36 k 68 k 22 k	\$PEGFICATI		
0) 12.12. 0) 08-00 STUDD POS NO. R55. R56. R57. R58. R59. R60. R64. R62. R63. R64. R62. R65. R65. R65. R64. R62. R65. R65. R65. R65. R66. R67. R66.	1-82 ANN TORK BACK PART NO 57.44.4689 57.44.4485 57.44.482 58.043402 57.44.4924 58.043502 57.44.402 57.44.402 57.44.402 57.44.402 57.44.402 57.44.402 57.44.402 57.44.402 57.44.403 57.44.403 57.44.403 57.44.403	6,8 4,M 4,8 k 4,8 k 4 k 220 5 k 4 k 42 k 42 k 42 k 22 k 22 k 22 k 5,8 k 6,8 k	### Pot.		3 12.12 12.00 18.0	FART NO 57.4A.4933 57.4A.4223 57.4A.4935 57.4A.4936 57.4A.4936 57.4A.4936 57.4A.4936 57.4A.4936 57.4A.4936 57.4A.4936 57.4A.4936 57.4A.4936 57.4A.4936 57.4A.4937 5	33 k 2,7 k 10 M 68 k 330k 10 M 4 M 33 36 k 68 k 22 k	\$PEGFICATI		
12.12 08-02 50 08-02 50 08-02 50 08-02 50 08-02 75 75 75 75 75 75 75 75	1-82 / Talk Back PART NO 57.4414689 57.441405 57.441405 57.441402 57.441402 57.441402 57.441402 57.441402 57.441402 57.441403 57.441403 57.441403 57.441403 57.441403 57.441403	## VALUE 6,8 1 M 1,8 k 1,8 k 1,8 k 220 5 k 1,2 k 1,2 k 1,2 k 22 k 22 k 2,2 k 1,5 k 6,8 k 1,5 0	### Pot.		0 12.12 0 08-0 8TU0 R445 R445 R446 R446 R447 R448 R440 R421 R421 R424 R424 R426 R427 R428 R428 R428 R428 R428 R428 R428 R428	- 62	33 k 2,7k 40 M 68 k 330k 40 M 4 M 33 36 k 6.8 k 6.8 k 4.0 M	\$PEGFICATI		
12.12 08-07 50 POS NO R55 R56 R57 R58 R59 R60 R62 R63 R64 R65 R65 R66 R67 R68 R69 R64 R65 R66 R67 R68 R69 1-82 / MB/ Talk Back PART TO K Back 57.441-689 57.441-689 57.441-405 57.441-405 57.441-402 58.043-02 57.441-203 57.441-203 57.441-203 57.441-203 57.441-203 57.441-203 57.441-403 57.441-403	6,8 4 M 4,8 k 4 k 220 5 k 4 k 42 k 42 k 42 k 42 k 42 k 42 k 43 k 45 k 45 0 45 0	### Pot.		0 12.12 0 08-0/ STUD STUD R445 R446 R447 R448 R449 R420 R421 R422 R423 R424 R426 R426 R427 R428 R438	- 62	33 k 2/7k 40 M 68 k 330k 40 M 4 M 33 36 k 6.8 k 6.8 k 22 k 40 M 22 k 2/2 k	\$PEGFICATI			
0 12.12. 0 08-00 0	1-82 AMP TOIL BOOK PART NO 57-441-86.9 57-441-46.9 57-	6,8 4 M 4,8 k 4,8 k 220 5 k 4 k 422 22 k 22 k 22 k 45 k 45 6,8 k 450 450 450	### Pet.		0 12.12 0 08-0/ 8TUID 1MD POS NO R445 R446 R447 R448 R424 R426 R427 R426 R427 R428 R438	PART NO 57.44.4933 57.44.4934 57.44.4935 57.44.4935 57.44.493 57.44.493 57.44.493 57.44.493 57.44.495 57.4	33 k 27k 40 M 68 k 330k 4 M 4 M 33 36 k 68 k 68 k 40 M 22 k 20 k 40 M	\$PEGFICATI		
12.12. 108-0/1 108-0	1-82	## VALUE 6/8 4 M 4/8 k 4/8 k 4 k 220 5 k 4 k 42 k 22 k 22 k 22 k 35 k 45 b 6/8 k 450 450 450 47 k	### Pot. ###		O	- 92	33 k 27k 40 M 68 k 330k 40 M 4 M 4 M 33 36 k 68 k 68 k 22 k 40 M 22 k 22 k	2% 2% 2%		
D POS NO. R. R. S. R. S. R. R. S. R. R. S. R. R. S. R. R. S. R. R. S. R. R. S. R. R. S. R. R. S. R. R. S. R. R. S. R. R. S. R. R. S. R. R. S. R. R. S. R. R. S. R.	1-82 Asset Cack PART NO 57.44.689 57.44.4689 57.44.4482 58.64.3402 57.44.4482 58.64.3402 57.44.4223 57.44.4223 57.44.4223 57.44.423 57.44.423 57.44.423 57.44.424 57.44.424 57.44.424 57.44.424 57.44.424 57.44.424 57.44.424	VALUE 6,8 4 M 4,8 k 4,8 k 220 5 k 42k 42k 42k 42k 42k 45 k 6,8 k 450 450 450 450 470 471 472 472 472 472 472 472 472 472 472 472	### Pet.		Q	- 92	VALUE 33 k 2,7 k 40 M 68 k 330k 40 M 4 M 33 36 k 6.8 k 22 k 40 M 22 k 2,2 k 40 M 33 M	2% 2% 2%		
) 12.12. 12. 12. 12. 12. 12. 12. 12. 12.	1-82	VALUE 6.8 4 M 4,8 k 4 k 220 5 k 4 k 42 k 22 k 22 k 22 k 35 k 45 k 45 p 450 450 450 450 450 450 450 450 450 450	### Pot. ###		12.12 12.1	- 92	23 k 2/7 k 40 M 68 k 330k 40 M 4 M 33 36 k 68 k 22 k 40 M 22 k 22 k 40 M 33 k 42 k 56 k	2% 2% AA AB AB		
) 12.12. 12. 12. 12. 12. 12. 12. 12. 12.	1-82 Assg. (EER) Talk Back PART NO 57.44.4689 57.44.4482 57.44.4482 58.043402 57.44.4224 58.043502 57.44.4223 57.44.4223 57.44.423 57.44.423 57.44.423 57.44.424 57.44.427 57.44.427 57.44.427	VALUE 6,8 4 M 4,8 k 4 k 220 5 k 42 k 42 k 42 k 42 k 42 k 43 k 45 k 45 k 45 k 45 k 45 k 45 k 45 k 45	### POLITIONS/TOURVALENT 24		Q	- 92	33 k 2,7 k 40 M 68 k 330k 40 M 4 M 33 36 k 6.8 k 22 k 4,0 M 22 k 2,2 k 40 M 3,3 k 42 k 5,6 k	2% 2% 2% 2% 4% 4% 4%		
D POS NO	1-82 Jagg Toik Back PARTNO 57.44.168.9 57.44.1468.9 57.44.1468.9 57.44.1462.9 57.44.1462.9 57.44.1423.9 57.44	## VALUE 6,8 1/1 1	### Pot. ###		Management Man	- 92	33 k 2,7 k 40 M 68 k 350k 4 M 4 M 33 36 k 6.8 k 6.8 k 22 k 40 M 22 k 2,2 k 40 M 33 k 4 M 5,6 k 4 K 5,6 k 4 K 5,6 k 5,6 k 5,7 k 6,8 k 6 k 6	2% 2% 2% 4% 4% 4%		
) 12 12 12 12 12 12 12 12 12 12 12 12 12	1-82 Asset Carlo C	68 4 M 4/8 k 4 k 220 5 k 4/2 k 22k 4/2 k 22k 4/5 k	### POLITIONS/TOURVALENT 24		Month Mont	- 92	23 k 27k 40 M 68 k 330k 4 M 4 M 33 36 k 68 k 68 k 22 k 42 k 40 M 33 k 42 k 56 k 42 k 56 k	25 25 25 45 45 45 45 45 45 45 45 45 45 45 45 45		
D POS NO. R55. R56. R57. R68. R69. R74. R75. R78. R78. R78. R78. R78. R78. R78. R78	1-82	VALUE 6.8 4.M 4.8 k 4.8 k 4.4 k 220 5 k 42 k 42 k 42 k 42 k 42 k 45 k 45 0 45 0 45 0 45 0 45 0 45 0 45 0 45 0	### POLITIONS/TOURVALENT 24		(A) 12. 12 (A) 12. 12	- 92	33 k 2/7k 40 M 68 k 350k 40 M 4 M 33 36 k 6.8 k 6.8 k 22 k 40 M 22 k 2,2 k 40 M 3,3 k 22 k 2,6 k 40 M 5,6 k 40 M 5,6 k 40 M 5,6 k 40 M 5,6 k 40 M 6,8 k 6,8	2% 2% 2% 4% 4% 4% 4% 2%		
D POS NO. D POS NO. R55. R57. R58. R59. R60. R64. R62. R63. R64. R64. R65. R64. R67. R68. R70. R71. R72. R73.	1-82	## VALUE 6,8	### POLITIONS/TOURVALENT 24		12.12 12.1	- 92	33 k 27k 40 m 68 k 330k 4 M 4 M 33 36 k 6.8 k 22 k 22 k 10 M 22 k 22 k 10 M 33 k 40 M 22 k 56 k 56 k 56 k	25 25 25 45 45 45 45 45 45 45 45 45 45 45 45 45		
) 12 12 12 12 12 12 12 12 12 12 12 12 12	1-82	VALUE 6.8 4 M M 4.8 k 4.8 k 4.8 k 4.2 k 4.2 k 4.2 k 4.2 k 4.2 k 4.5 k 4.5 k 4.5 k 4.5 k 4.5 c 4.	2% 2% 2% 2% 2% 2% 2% 2% 2% 2% 2% 2% 2% 2		(a) 12.12 (b) 12.12 (c) 12	- 92	33 k 27k 40 m 68 k 330k 4 M 4 M 4 M 33 36 k 6.8 k 22 k 40 M 22 k 40 M 22 k 56 k 56 k 56 k	2% 2% 2% 4% 4% 4% 4% 2%		
) 12.12.00 12.12.00	1-82 Asset 1-86 Asset	## VALUE	### Pot. ###		(2) 12.12 (1) 12	- 92	33 k 27k 40 m 68 k 330k 40 m 4 m 33 36 k 68 k 22 k 40 m 22 k 22 k 40 m 33 k 40 m 56 k 56 k 56 k 56 k 56 k 56 k 56 k 56 k	2% 2% 2% 4% 4% 4% 4% 2%		
) 12 12 12 12 12 12 12 12 12 12 12 12 12	1-82	## VALUE 6.8 4 M 4.8 k 4.8 k 4.8 k 4.2 k 4.2 k 4.2 k 4.2 k 4.2 k 4.2 k 4.5 k	2% 2% 2% 2% 2% 2% 2% 2% 2% 2% 2% 2% 2% 2		(2) 12. 42 (2) (2) (38 - 1) (3	- 92	33 k 27k 40 m 68 k 330 k 4 M 4 M 4 M 4 M 4 M 4 M 23 k 68 k 68 k 68 k 68 k 68 k 68 k 68 k 68	2% 2% 2% 4% 4% 4% 4% 2%		
) 12.12. 12. 12. 12. 12. 12. 12. 12. 12.	1-82 Asset 1-86 Asset	## VALUE	### Pot. ###		(2) 12.12 (10.15) (10.	- 92	33 k 27k 40 M 68 k 330k 40 M 4 M 33 36 k 68 k 68 k 68 k 68 k 68 k 72 k 40 M 22 k 70 M 33 k 72 k 70 M 8 k 8 k 8 k 72 k 70 M 8 k 8 k 70 M 8 k 8 k 8 k 8 k 8 k 8 k 8 k 8 k 8 k 8 k	2% 2% 2% 4% 4% 4% 4% 2%		
) 12.12.10) 08-07) 09-08 TUONO 0 10 10 10 10 10 10 10 10 10 10 10 10 10	1-82	## VALUE 6.8 4 M 4.8 k 4.8 k 4.8 k 4.2 k 4.2 k 4.2 k 4.2 k 4.2 k 4.2 k 4.5 k	### Pot. ###		(2) 12. 42 (2) (2) (38 - 1) (3	- 92	33 k 27k 40 m 68 k 330 k 4 M 4 M 4 M 4 M 4 M 4 M 23 k 68 k 68 k 68 k 68 k 68 k 68 k 68 k 68	2% 2% 2% 4% 4% 4% 4% 2%		
D POS NO. 0 POS	1-82	## VALUE 6.8 4.18	### Pot. ###		(2) 12.12 (1) (2) (2) (3) (3) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4	- 92	33 k 27k 40 M 68 k 330k 40 M 4 M 33 36 k 68 k 68 k 68 k 68 k 68 k 72 k 40 M 22 k 70 M 33 k 72 k 70 M 8 k 8 k 8 k 72 k 70 M 8 k 8 k 70 M 8 k 8 k 8 k 8 k 8 k 8 k 8 k 8 k 8 k 8 k	2% 2% 2% 4% 4% 4% 4% 2%		
) 12.12 30.00 30.0	1-82	## VALUE 6.8 4.18	### Pot. ###		(A) 12.12 (A) 12	- 92	33 k 27k 40 M 68 k 330k 40 M 4 M 33 36 k 68 k 68 k 68 k 68 k 68 k 72 k 40 M 22 k 70 M 33 k 72 k 70 M 8 k 8 k 8 k 72 k 70 M 8 k 8 k 70 M 8 k 8 k 8 k 8 k 8 k 8 k 8 k 8 k 8 k 8 k	2% 2% 2% 4% 4% 4% 4% 2%		
D POS NO. 0 POS	1-82	## VALUE 6.8 4.18	### Pot. ###		(a) 12.42 (b) 12.42 (c) 12	- 92	33 k 27k 40 M 68 k 330k 40 M 4 M 33 36 k 68 k 68 k 68 k 68 k 68 k 72 k 40 M 22 k 70 M 33 k 72 k 70 M 8 k 8 k 8 k 72 k 70 M 8 k 8 k 70 M 8 k 8 k 8 k 8 k 8 k 8 k 8 k 8 k 8 k 8 k	2% 2% 2% 4% 4% 4% 4% 2%		
) 12.12 30.00 30.0	1-82	## VALUE 6.8 4.18	### Pot. ###		12.12 12.1	- 92	33 k 27k 40 M 68 k 330k 40 M 4 M 33 36 k 68 k 68 k 68 k 68 k 68 k 72 k 40 M 22 k 70 M 33 k 72 k 70 M 8 k 8 k 8 k 72 k 70 M 8 k 8 k 70 M 8 k 8 k 8 k 8 k 8 k 8 k 8 k 8 k 8 k 8 k	2% 2% 2% 4% 4% 4% 4% 2%		
D POS NO. 0 P. 10	1-82	## VALUE 6.8 4.18	### Pot. ###		(a) 12.42 (b) 12.42 (c) 12	- 92	33 k 27k 40 M 68 k 330k 40 M 4 M 33 36 k 68 k 68 k 68 k 68 k 68 k 72 k 40 M 22 k 70 M 33 k 72 k 70 M 8 k 8 k 8 k 72 k 70 M 8 k 8 k 70 M 8 k 8 k 8 k 8 k 8 k 8 k 8 k 8 k 8 k 8 k	2% 2% 2% 4% 4% 4% 4% 2%		
) 12.12 00 00 00 00 00 00 00 00 00 00 00 00 00	1-82	## VALUE 6.8 4.18	### Pot. ###		12.12 12.1	- 92	33 k 27k 40 M 68 k 330k 40 M 4 M 33 36 k 68 k 68 k 68 k 68 k 68 k 72 k 40 M 22 k 70 M 33 k 72 k 70 M 8 k 8 k 8 k 72 k 70 M 8 k 8 k 70 M 8 k 8 k 8 k 8 k 8 k 8 k 8 k 8 k 8 k 8 k	2% 2% 2% 4% 4% 4% 4% 2%		

Talk Back / Studio Monitor 1.912.320

IND	POS NO		PART NO	VALUE	1	PECIF	ICATIONS/EQUIVALENT		MF
	R172	57.	11.4683	68k					
	R473	57.	11.4180	18					
	R174	57,	11,4180	18					
	R475	57,	11.4180	18					
	R176	57	11.4180	18					
	R477	57	11.4103	10 k	2%				
	R178	57	11.4471	470	2%				
	R179	57.	11.4471	470	2%				
	R480	57.	11.4103	10 K	2%				
	R181	57.	11.4220	22	2%				
	R482	57.	11,4220	22	2%				
	R183	57.	11.4104	/100 k	2%				
	R184	57	11.4104	/00 k	2%				
	R185	1.91	2.004,25	47 k	Pot.	90S.	log. (TB-Vol)		
	R186/7	1,91	2.001,34	2×10k	Stere	20-P	ot.pos.log. (PFL-Vol	.)	
	R188	57.	99,02 09	5,6	PTC		Philips 2322.662.940	05	
	R489	57.	99.02.09	5,6	PTC		Philips 2322.662.9400	5	
	R190	57.	11.41 05	4M					
	5/1	(55	15.0007		Pushbut	ton	switch (7switches)		Sch
	SM-16	55	15,0102		Knob	cdo	rless		Sch
		1 55	45.04.05		Knob	gree	en e		Sch
		155	15,0006		Pushbutt	on	switch (6switches)	,	Scl
	52-7		.15.0103		Knob re	 d	· · · · · · · · · · · · · · · · · · ·		Scl
		1 55	15,01 04	-	Knob or	auge	2		Scl
	S8, S3		15,0112		_		witch, closing, non lat	tchina	
		$\overline{}$	15,0123		Knob o				
	510		15.0003		Pushbult				Sch
		~	03.0310		Knob v	vht			Sch
IND	DAT	E	NAME	1					
4				Sch S	chadow	ITT			
3				1					
2				1					
1	12.12	83	A.Ho- My	1					
Ō	08-0	1-82		1					
			Talk Back	Churlin Ma		PL	1.912.320	PAGE 9	

ND POS NO	P	ART NO	VALUE	s	PECIFI	CATIONS/EQUIVALENT		MFR
TA	1.022	2.417.00	1:3,16	Mic-	trafo)	50	ude
T2	4.022	.352,00	1:4,7	Outp	ut t	afo	ક્ર	vde
Т3	1.022	.352.00	1:47	Outr	out t	rafo	SI	ude
T4	4.022	.352.00	1:47	Outr	out t	rafo	St	ude
	1016	11050		V-11 -				
		0.440.50		_		ntrolled ampl.		ude
V(A2	7.040	.11 0,50		Volta	ge co	ontrolled ampl.	51	ude
				1				
JA		24.0103				ith switched conta		
J		1.0020				mpers JSJ1, JSJ!	2	
JSJ		01.0021		Jumper				
P		14.2007				ctor Abpins		
P P	54.0	04.0359		Edge	onne	ector 32 pins		
ΧВ	55./	15.0404		Lamp ho	lder	W2*4,6d		
XIC	53.0	03.0166		IC-Sock	et D	IP 8 pins		
				1			-	
				-				
				-				
							o.	
_				_				
NDI DAT	-	NAME	<u> </u>	<u> </u>				
MD DAT	-	NAME	 					_
3			j					
2]					
~		A. Ho- My						
08-0	1-82	Ny	L					
STUD	ER	Talk Back	/Studio M	lonitor	PL	1.912.320	PAGE 40 C)F.A



Talk Back / PFL Amplifier

1.912.321

INC	POS NO		PART NO	VALUE	SF	ECIFICATIONS/EQUIVA	LENT MFI
	C 1	59	34.422.4	220 pF	CER	5%	
	C 2	59	06.0333	33 nF	PE	A0%	
	C 3	59	34.2470	47 pF	CER	5%	
	C 4	59	26.4330	33,uF	SAL	10V	
	C 5	59	26,2400	10 JuF	SAL	/6V	
	C 6	59	06.0474	470 nF	PE	40%	
	C 7	59	22.4404	100 MF	EL	16V	
	C 8	59	22.4404	F بر 100/	EL	16V	
	C 9	59	06.0682	6,8 nF	PE	40%	
	C40	59.	26.2400	10 MF	SAL	46V	
	C44	59	26.4330	33,uF	SAL	10V	
2	C42	59	226100	10 µF	EL	16V	
	C/43	59	34,2470	47 pF	CER	5%	
	C/14	59	22.4/10/	100 JuF	EL	/6V	
	C45	59	22.4404	100 a F	EL	76 V	
	C 47	59	22.4404	100µF	EL	16V	
	C48	59	06.0682	6,8 nF	PE	40%	
	C/19	59	22.2224	220µF	EL	6V	
	C20	59	22.2224	عبر220 F	EL	6V	
	C24	59	34.422.4	220pF	CER	5%	
	C22	59	34.422.4	220pF	CER	5%	
	C23	59	.22.4404	100 MF	EL	/6V	
	C24	59	22.44.04	100 MF	EL	/6V	
	C25	59	.26,5459	1,5 pcF	SAL	25V	
	C26	59	26.5159	1,5 MF	SAL	25V	
	C27	59	.22.4404	100,uF	EL	46V	
	C28	59	.22.4404	100,uF	EL	46V	
	C29	59	.22,4224	220,4F	EL	/6V	
	C30	59	.22.422.4	220,nF	EL	16V	
IND	DAT	E	NAME	I			
4				CER C	eramic		
3				EL E	ectroly	tic	
2	19-04	-85	My		lyeste		
Œ	25-2	-85	му	SAL SO	olid Alun	inium Lacquered	d
Ĉ	05-04	- 82	say	1			
0	TUO	rem	Tall Barb	/PFL-Ampl	0	PL 4.942,324	PAGE A OF

IND	POS NO		PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	DA	50	.04:0125	1N4448	or equivalent	any
	D2	50	04.0425	4N4448	or equivalent	any
	D3	50	.04,0125	4N4448	or equivalent	any
	D4	50	04.01.25	4N44"8	cr equivalent	any
	DLQ/	30	99,0126	4 N2 6	4N28)	M,Ti
	DLQ2	5.0	99.0126	4N26	(4 N28)	M, TI
	DLQ3	50	99.0426	4N26	(4 N28)	м, т
_	IC 4	50	09.0107	RC4559		Ra, TI
_	IC2		.09.0107	RC4559		Ro.TI
_	IC3		.09.0103	TLOHCP	LF354N	TI, N
_	IC.4		09.0407	RC4559	Li S SA IN	Ro.TI
_	IC5		09.0407	RC 4559		Ra,TI
_	IC6		20 ko.eo.	NE 5532 N	XR 5532N	Si, Ex
_	JSJ4	54	04.0024		Jumper jack	
	Q4	50	03.0545	P-N-P	*	any
_	Q2	50	03,0545.	P-N-P	*	any
	Q3	50	03.0350	J-N-FET	J4/2 , MPF 43.92	Sx,N,M
	Q4	50	03.0350	J-N-FET	J442 , MPF 4392	Sar, M, M
	Q5	50	.03.0340	N-P-N	*	awy
	Q6	50	03.0545	P- N- P	*	any
	0.7	50	03.0350	J-N-FET	.412, MPF 4392	Sx, N, M
	08	50	03,0545	P-N-P	*	аиу
	Q9	50	03.0350	J-N-FET	J442, MPF 4392	SH, N, M
	Q40	50	03.0350	J-N-FET	J412, MPF 4392	SK,N M
	0.41	50	03.0545	P-N-P	*	any
	Q42	50	03.0350	J-N-FET	JM2, MPF 4392	Sx,N,M
	Q43	50	03.0350	J-N-FET	J412, MPF 4392	Sx,N,M
ND	DAT	Ε	NAME	1		
3				Ex Exar	Sx Siliconics	
3				M Motoral	a TI Texas Instr.	
2	49-04		ay	N Nations		U _{cFO} >401
D	25-2-		NY	Ra Roylhec		
0	05-04	-82	164	Si Signetin	16	
Œ	สกบาล	WED.	Talk Back	/PFL- Ampl. B	Board PL 4.942.324 PAG	E 2 OF 6

Q44 \$0.03.0340 N-P.N L 800-M 8C331-25 or regiv	INC	POS NO		PART NO	VALUE	SPECI	FIGATIONS/EQUIVALENT	MER
0.46 50.03.0340.0 N.P.N. L. 850-M. 8C.337-25. or equiv. 0.47 50.03.035.4 P.N.P. L. 80-M. 8C.327-25 or equiv. R2 57.44.922.2 2.7 k. R.S. S.74.49.623 68 k. R3 57.44.9633 33 k. R.S. S.74.49.633 33 k. R5 57.44.9333 33 k. R.S. S.74.44.055 4 M. R8 57.44.4055 4 M. A.M. A.M. R9 57.44.405 4 M. A.M. A.M. R40 57.44.4063 4 M. A.M. A.M. R40 57.44.4063 4 M. A.M. A.M. A.M. R41 57.44.4063 4 M. A.M.		Q.14	50.	03,0340	N-P-N	Ic:800+A	BC337-25 or equiv.	anv
Q4F \$0,03,0354 P-N-P L; 80wl 8C327-25 or early		045	50	03.0354	P-N-P	(c. 800 mA	BC327-25 or equiv	QUY
R2 57.A.4.9.22 2.7. k R3 57.A.4.9.23 68 k R4 57.A.4.9.23 68 k R5 57.A.4.9.23 33 k R5 57.A.4.9.23 33 k R6 57.A.4.9.33 33 k R7 57.A.4.4.9.33 33 k R7 57.A.4.4.9.3 45 k R8 57.A.4.4.0.5 4M R8 57.A.4.4.0.5 4M R9 57.A.4.4.0.5 4M R9 57.A.4.4.0.5 4M R9 57.A.4.4.0.5 4M R9 57.A.4.4.0.3 45 k R9 57.A.4.4.0.3 45 k R9 57.A.4.4.0.3 45 k R9 57.A.4.4.0.3 45 k R9 57.A.4.4.0.3 45 k R9 57.A.4.9.2 21 k R9 57.A.4.9.2 21 k R9 57.A.4.9.3 58 k R9 57.A.4.9.3 58 k R9 57.A.4.9.3 58 k R9 57.A.4.9.3 58 k R9 57.A.4.9.3 58 k R9 57.A.4.9.3 58 k R9 57.A.4.9.3 58 k R9 57.A.4.9.3 58 k R9 57.A.4.9.3 38 k R9 57.A.4.9.3 38 k R9 57.A.4.9.3 58 k R9 57.A.4.9.3 58 k R9 57.A.4.9.3 58 k R9 57.A.4.9.3 58 k R9 57.A.4.9.3 58 k R9 57.A.4.9.3 58 k R9 57.A.4.9.3 58 k R9 57.A.4.9.3 58 k R9 57.A.4.9.3 38 k R9 57.A.4.9.3 38 k R9 57.A.4.9.3 38 k R9 57.A.4.9.3 38 k R9 57.A.4.9.3 38 k R9 57.A.4.9.3 38 k R9 57.A.4.9.3 38 k R9 57.A.4.9.3 38 k R9 57.A.4.9.3 38 k R9 57.A.4.9.3 38 k R9 57.A.4.9.3 38 k R9 57.A.4.9.3 38 k R9 57.A.4.9.3 38 k R9 57.A.4.9.3 38 k R9 57.A.4.4.4.0 58 k R9 57.A.4.4.4.0 88 k R9 57.A.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.		Q16	50	03.0340	N-P-N	lc:800 ⊬A	8C337-25 or equiv.	auy
R3 57.44.4683 68 k R4 57.44.833 38 k R5 57.46.8406 40 M R6 57.44.8408 33 k R7 57.44.8408 40 M R8 57.44.8408 40 M R9 57.44.833 40 M R9 57.44.833 40 M		Q17-	50	03.0354	P- N-P	Ic: 800 mA	BC327-25 or equiv	guy
R3 57.44.4683 68 k R4 57.44.833 38 k R5 57.46.8406 40 M R6 57.44.8408 33 k R7 57.44.8408 40 M R8 57.44.8408 40 M R9 57.44.833 40 M R9 57.44.833 40 M	H	-					-	
RY 57.44.4933 33k PS 57.44.4933 33k R3 57.44.4905 4M R6 57.44.4905 4M R7 57.44.4905 4M R8 57.44.4905 4M R8 57.44.4905 4M R8 57.44.4905 4M R8 57.44.4905 4M R8 57.44.4905 4M R8 57.44.4905 4Sk R84 57.44.4903 4Sk R84 57.44.4903 4Sk R83 57.44.4902 4k R83 57.44.4902 4k R84 57.44.4902 4k R84 57.44.4902 4k R84 57.44.4923 27k R85 57.44.4923 32k R86 57.44.4933 58k R89 57.44.4933 58k R89 57.44.4933 33k R89 57.44.4933 33k R89 57.44.4933 33k R89 57.44.4933 33k R89 57.44.4933 33k R89 57.44.4933 33k R89 57.44.4933 33k R89 57.44.4933 33k R89 57.44.4933 33k R89 57.44.4933 33k R89 57.44.493 38k R89	-	R2	57	11,4272	2,7 k			
PS 57.46.406 40 M P6 57.44.4033 33 k P7 57.44.405 AM P8 97.44.405 AM P8 97.44.405 AM P9 97.44.405 AM P9 97.44.405 AM P9 97.44.405 AM P9 97.44.405 AM P9 97.44.405 AM P9 97.44.405 AM P9 97.44.405 AM P9 97.44.403 AM P9 97.44.		R3	57	11.4683	68 k			
R6 \$7.44.4333 33 k		R4	57	11.4333	33 k			
PT		R5	57	11.6106	/10 M			
Res		R6	57.	11.4333	33 k			
P3		R7	57	11.41.05	4 M			
C40 \$7.44.963 \$8k		R8	57	44.6406	40M			
Part STAMMS3 45 k 240 57.44 40 s 40 k 241 57.44 40 s 44 k 24 k		R9	57	11.4105	A M			
242 57.44.4403 40k R49 57.44.4402 4k R49 57.44.4273 27k R45 57.44.4273 27k R46 57.44.402 4k R47 47.44.402 4k R47 57.44.403 68k R48 57.44.6335 3,3M R49 57.44.6335 3,3M R49 57.44.6335 3,3M R40 57.44.6335 3,3M R40 57.44.6335 3,3M R40 57.44.6335 3,3M R40 57.44.6333 33k R20 57.44.4333 33k R20 57.44.4333 33k R21 57.44.4334 4M R22 58.025.223 22 k Trimi Pet. R24 57.44.4324 48k R25 57.44.4324 220		R40	57	11.4683	68k			
23 57.44.4402		R44	57	11.4153	45 k			
R44 S7.44.9273 21k R45 S7.44.9273 27k R46 S7.44.9273 27k R46 S7.44.902 4 k R47 S7.44.903 68k R48 S7.44.935 33M R49 S7.44.935 33M R49 S7.44.933 33K R20 S7.44.403 40k R20 S7.44.403 338 R20 S7.44.403 40k R21 S7.44.433 33k R22 S7.44.403 41M R22 S7.44.403 41M R23 S8.025.23 22.k Trum-Pet. R24 S7.44.44.92 488 R25 S7.44.44.924 220		R42	57	11,4103	40 k			
25 57.44.9273 21k		R43	57	11.4102	4k			
246 \$7,744,402		R44	57	11.4273	27 k			
C1T 57.444683 68 k R4B 57.44635 3.3M L29 57.446335 3.3M R20 57.446333 3.3k R21 57.444933 3.3 k R22 57.444005 A M R23 58.025223 2.2 k Trim-Pot. R24 57.444462 A8k R25 57.444482 A8k R24 57.444482 A8k		R45	57	.44.4273	27k			
R48 57.44.6335 3,3M R49 57.44.6335 3,3M R20 57.44.4403 40k R24 57.44.4333 33k R22 57.44.4405 4 M R23 57.44.4405 4 M R24 57.44.4482 48k R25 57.44.4482 48k R25 57.44.4224 220		R16	57	11.41.02	4 k			
249 57.M 6935 3.3M 220 57.444933 .40k 221 57.444933 .30k R22 57.444933 .30k R22 57.444933 .20k R23 58.025223 .20k R24 57.444482 .40k R25 57.444482 .40k R25 57.444924 .20		R47	57	11.4683	68 k			
R20 57.44.4403 A0k R24 57.44.44933 33 k R22 67.44.4405 4 M R23 58.00.5923 22 k Trim-Pot. 724 57.44.4432 R25 57.44.4924 220	Г	R48	57	44.6335	3,3 M			
P24 57.4M4933 33k 220 57.4M4953 4 M R23 58,025223 22 k Trim-Pet. R24 57.4M4924 220 220		R49	57	11.6335	3,3 M			
R22 57.44.4405 4 M R23 58.025223 22 k Trim-Pot. R24 57.44.4482 48k R25 57.44.4224 220		R20	57	11.4103	40 k			
R23 58,02.5223 22 k Trim-Pot. R24 57,44,4482 4,8 k R25 57,44,4224 220		R24	57	44.4333	33 k			
R24 57,44,4482 4.8k R25 57,44,4224 220	Г	R22	57	.11.4105	4 M			
R25 57.44.4224 220		R23	58	,02.5223	22 k	Trim-	Pot.	
		R24	57	,44,4482	4,8 k			
[IND] DATE NAME		R25	57	11.4221	220			
	IIND	I DA	TE	NAME	1			

ND P	OS NO		PART NO	VALUE	SPEC	IFICATIONS/EQUIVALENT	1	MFR
R	26	57.	11.4104	∕100 k				
R	27	57.	11.4103	40 k				
R	28	57.	44.4823	82 k				
R	29	57.	44.4223	22 k				
R	30	57.	11.4682	6,8 k				
R	34	57,	44.4562	5,6 k				
R	32	57.	11.4682	6,8 k				
R	33	57.	11.482.2	8,2k				
R	34	57.	11.4822	8/2k				
R	35	57.	11.4103	40 k				
R	36	57.	44.4273	27 k				
R	37	57.	11.4104	400 k				
R	38	57.	11.4470	47				
R	39	58.	025472	4,7 K	Trim-	Pot		
R	40	57.	11.6106	//0 M				
R	144	57.	11.4105	A M				
R	42	57.	44.4333	33 k				
F	243	57.	11.4683	68 k				
R	244	57.	11.4272	2,7k				
R	45	57.	11.4+72	4,7 k				
R	46	57.	11.4472	4,7 k				
R	247	57.	11.4222	2,2 k				
R	148	58	02.5403	/10 k	Trim-	Pot.		
R	249	57.	11.4583	68 k				
R	250	57.	44.6406	40 M				
R	25/	57.	14.4334	330k				
R	252	57	11.4333	33 k				
R	53	57	11.4583	68 k				
R	254	57.	44.4223	22k				
R	255	57.	11.4272	2,7k				
IND	DATE		NAME	1				
4								
3				1				
② .	19-04	-85	MY	1				
1	25-02-	85	104	1				
0	05-ar	-82	104	1				

IND	POS NO		PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	R56	57.	11.4104	/100 k		
	R57	57.	44.4333	33 k		
	R58	57.	11.4104	/00k		
	R 59	57.	11.4392	3,9 k		
	R60	57.	44.4392	3,9 k		
	R61	57	11,4103	40 k		
	R62	57.	44.44.03	/0 k		
	R63	57	11.6106	/10 M		
	R64	57.	11.6106	40 M		
	R65	57.	11.1562	5,6 k		
	R66	57.	11.4181	V80		
	R67	58	.02,5472	4,7 k	Trim-Pot.	
	R68	57	.44.4562	5,6 k		
	R69	57.	11.41.81	- 480		
	R70	58	02.5472	4/7 k	Trim-Pot.	
	R74	57	11.4470	47		
	R72	57	11.4470	47		
	R73	57	44.4453	45 k		
	R74	57	44.4453	/15 k		
	R75	57	.44.4454	450		
	R76	57	11.4151	450		
	R77	57	44.4454	450		
	R78	57	11.4472	4,7 kc		
	R79	58	02.52.22	2,2k	Trim-Pot	
	R80	57	11.471	470		
	R84	57	11.4271	270		
	P82	57	11.1271	270		
	R83	57	44.4454	450		
	R84	57	A1.415A	450		
	R85		.11,4151	450		
IND	DAT	E	NAME	I	-	
4						
3				1		
(2)	49-04	- QE	RH.	1		

85 57	.11,4151	450				
DATE	NAME					
3-04-85	RIL					
5-02-85	My					
5-04-82	nug					
UDER	Talk Back/	FL-Ampl	Board	PL	1.912.321	PAGE 5 OF 6

ND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	R86.	57.44.4472	4,7 k		
	R87	58,02,5222	2,2 k	Trim-Pot.	
	R88	57.11.447.1	470		
	R89	57,44.4274	270		
	R90	57.44.427.4	270		
	R94	57.39.02.09	5,6	PTC Philips	
	R92	57.39.02.09	5,6	PTC \$ 2322.662.94005	_
	T4	1.022,417.00	4:3,46	Mic-Trafo	Stude
	T2	4.022,405.00	1:1:	Input-Trafo	Studen
					-
	XIC	53.03.04 66		IC-Socket, DIP 8pins	-
	P	5401,0020		Plug for Jumper JSJA PSIGH	-
					-
					-
					-
_					-
					-
					₩
_					-
		OPTIONS			-
_	D5	50.04.44.03		Zener, 7,5V, 400wW	any
_	R101	57.44.4332	3,3 k		+-
_	R102	57.44.4472	4,7 k		+
_	W4	-	-	wire conection on PCB	+-
_	-		-		+
	-		-		+-
	1	l			1

IND	DATE	NAME	1			
0			Anderungen			
③ ②			@ Fehler im Text k @ C10:59.26.2400 v			
	19-04-85	Aug	G C/12: 95:26:27:00 V	rira u	eu 93.22.6400	
0	25-02-85	ny				
0	05-04-82	ny				
95	TUDER	Talk Back	PFL-Ampl. Board	PL	1.912.321	PAGE 6 OF 6

CR MONITOR

Kontrollraum Monitor

Über gegenseitig auslösende Drucktasten können 15 verschiedene Abhörquellen angewählt werden. Um einen optimalen Gleichlauf des Stereoabhörens zu garantieren, steuert das Lautstärkepotentiometer zwei VCA. Allfällige, durch den Raum oder die Lautsprecher hervorgerufene Lautstärkeunsymmetrie, kann durch das schaltbare Balance-Potentiometer ausgeglichen werden. Tasten für Lautsprecher- und Phasenvertauschung sowie die Mono-Taste helfen dem Tonmeister beim Qualitäts- und Kompatibilitätstest. Der Ausgang des Abhörzuges ist auf zwei Monitorlautsprecher umschaltbar. Mit der METER-Taste können die Aussteuerungsmesser 1 und 2 wahlweise an die Summenausgänge Σ 1 + 2 oder parallel zum Abhörlautsprecher geschaltet werden.

Kopfhörerbuchsen (Impedanz 200Ω) und Schalter zum Dämpfen (-20dB) bzw. Abschalten des Einschubes vervollständigen den Einschub.

METER: Pegelanzeige umschaltbar von der Summe auf den

Kontrollraum Monitor.

: Kanalvertauschung am Lautsprecherausgang Ø CH1: Die Phase des linken Kanals wird um 180° gedreht

BALANCE IN: Das BALANCE Potentiometer wird eingeschaltet.

MONO: Die zwei Abhörkanäle werden als Monosumme auf

beide Monitorlautsprecher geschaltet.

EXT-INT: Ausgang umschaltbar auf zwei Monitorsysteme.

VOLUME: Lautstärkeregler

MONITOR -20dB: Die Abhörlautstärke wird um 20dB abgesenkt. (auch

von extern, z.B. durch Talk Back)

MONITOR OFF: Der Lautsprecherausgang wird abgeschaltet.

Speisung

<u>Leerlauf</u>

+ **15 V** 120mA

-15 V 120mA

- 6 V 60...120mA

- 24 V 1mA

Mechanische Daten

Frontplatte 420 x 40mm Tiefe 135mm

Gewicht 850 g

0

CR MONITOR

C.R. Monitor unit

Fifteen different monitoring sources can be selected with interlocking push buttons. In order to ensure optimum stereo tracking, the volume potentiometer controls VCAs. Any volume imbalance caused by the room acoustics or the speakers can be compensated by the switchable balance potentiometer. Buttons for speaker and phase transposition as well as the mono button are useful for the sound engineer during quality and compatibility tests. the output of the monitoring circuit can be switched between two monitor speakers. With the METER button the peak program meters 1 and 2 can selectively be connected to the master outputs 1 + 2 or in parallel to the monitoring speaker.

Headphones socket (impedance 200 Ω) and switch for muting or toning down (-20dB) the speakers are also included with this module.

METER: Instrument switchable from master to CR monitor.

: Left- and right-hand speaker outputs are transposed.

Ø CH1: The phase of the left-hand channel is inverted by 180°.

BALANCE IN: The BALANCE potentiometer is looped into the circuit.

MONO: Both monitor speakers reproduce a mono signal. **EXT-INT:** Output switchable to a second monitor system.

VOLUME: Volume control

MONITOR -20dB: Level is attenuated by 20dB (also from external outputs,

e.g. talk back path)

MONITOR OFF: The speaker output is switched off.

Power supply

No load 15 V 120mA

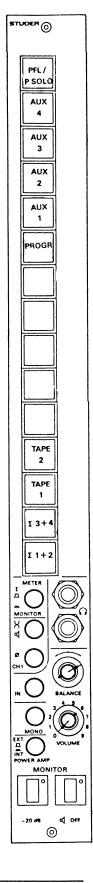
+ 15 V 120mA - 15 V 120mA

- 6 V 60...120mA

- 24 V 1mA

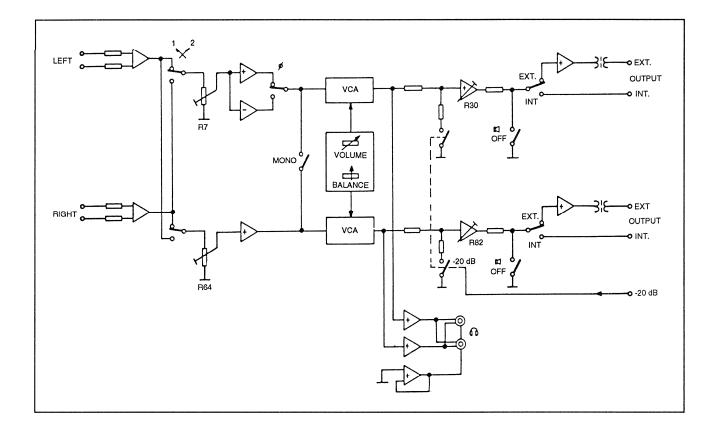
Physical data

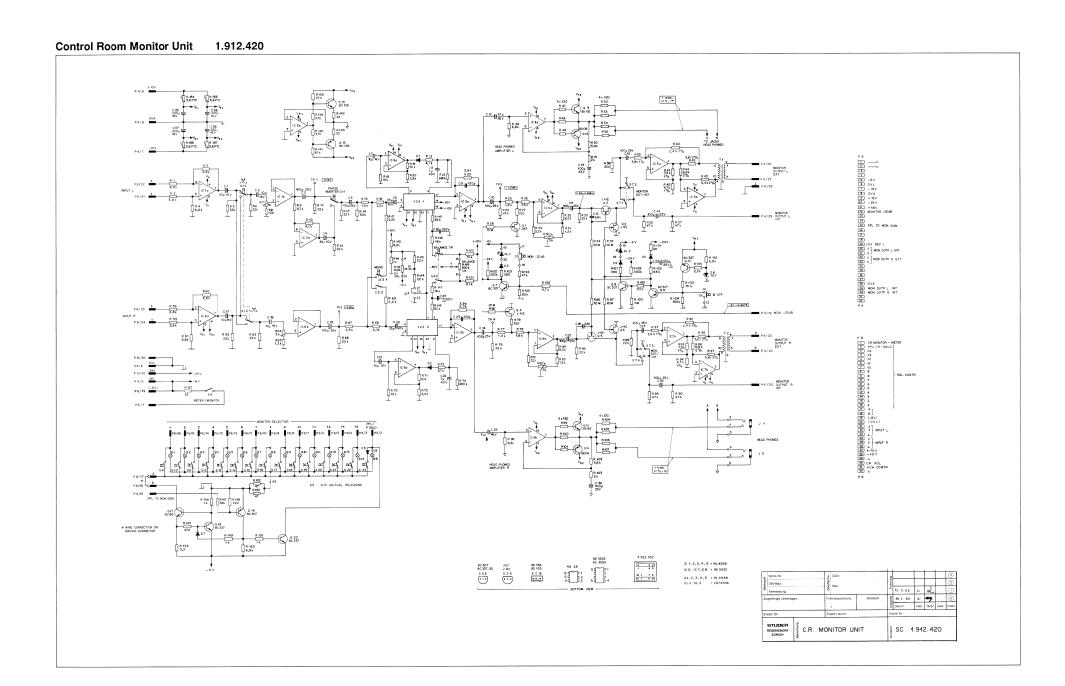
Front panel 420 x 40mm Depth 135mm Weight 850 q

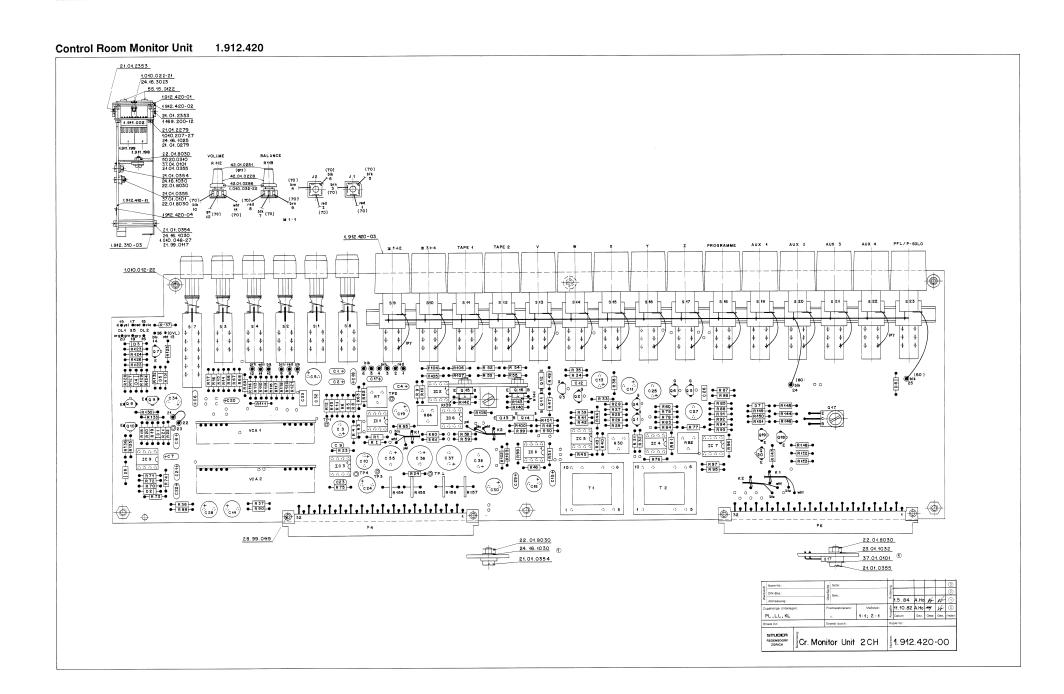


CR MONITOR

Blockdiagramm / Block diagram







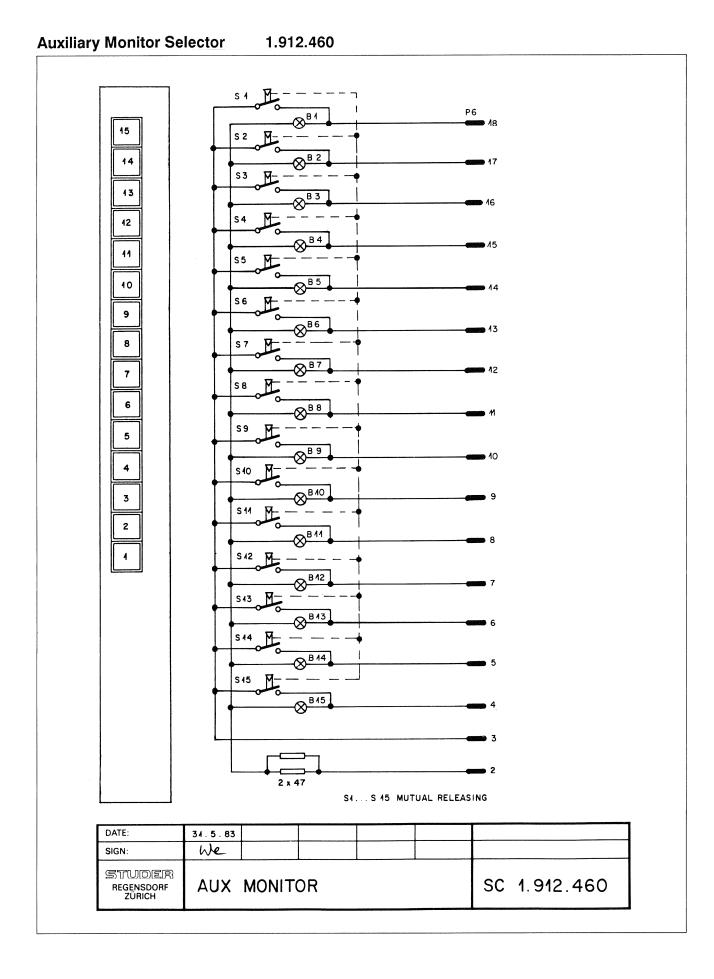
Control Room Monitor Unit 1.912.420

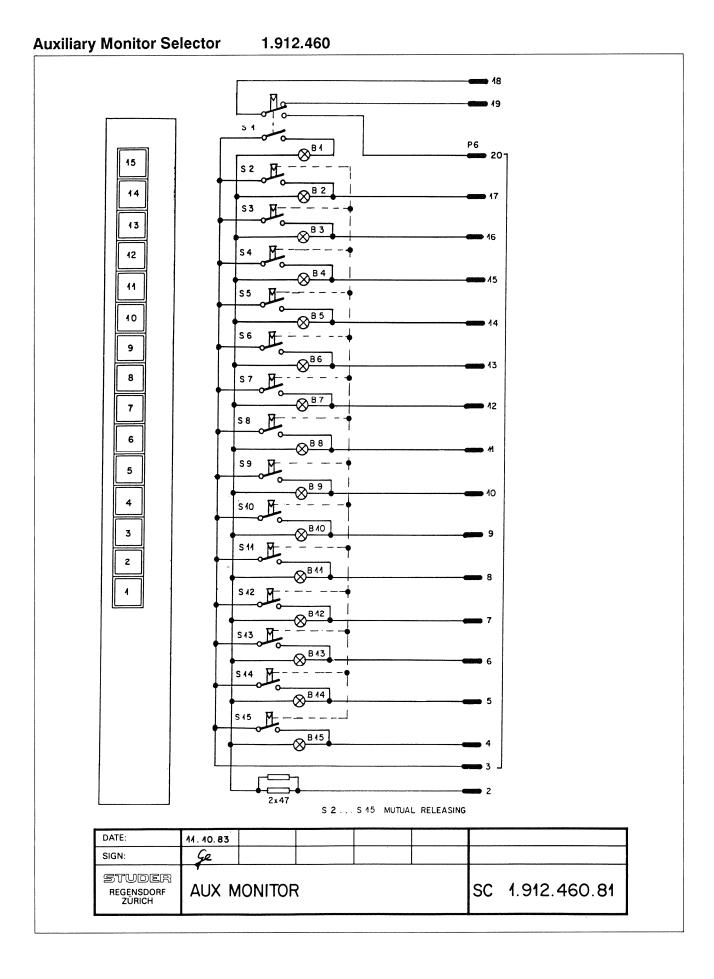
D] POS NO	PART		VALUE	SPECIFICATIONS/EQUIVALENT	MFR	IND	FOS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MF
_	54,02.		V 30mA	Lamp T1½			IC 5	50,09,0405	NE 5532 N	×R 5532 N	Si, E
B1-B19				SAL 16 V		-	IC 6	50.09.0407	RC4558	-	Ro,
C 1	59.26.2		10 µF			-			NE5532 N	×R 5532 N	Si,
C 2	59.263		10 MF	SAL 16 V		-	IC7	50,09.04.05			
C 3	59,22.5	5/10/	100 MF	EL 25V			IC.8	50.09,0105	NE5532 N	XR 5532N	Si,
C 4	59.26.	1330	33 µF	SAL 40V			IC9	50.09.0407	RC4559		Ra,
C 5	59.225	5404	100,ĸF	EL 25V	1						
C 6	59.26.		33 µF	SAL 40V							
							JA	54,24.04.03		Jack	
C 7	59.26.		40 AF			\vdash					\neg
C 8	59.26.		1 AF	SAL 40V		—	J2	54.24.04.03		Jack	_
C 9	59.34		/100 pF	CER 5%		l	.5J4,2	1,169.200.85		Jumper jack	+-
C 10	59.22.	5404	100 uF	EL 25V		_	P4 :	54.04.03.53		Edge Connector 32 p.	_
CM	59.22	5404	100 pF	EL 25V			P6	54.04.0359		Edga (onnector 32 p.	
C 12	59.06.		6,8 nF	PE 40%							
C 13	59.22		100 µF	EL 25V			24	50.03.0350	J-N-FET)	_
						-	02	50.03.0350	J-N-FET		
C 14	59.22		100 pcF				03	50,03,0350	J-N-FET		-
C 15	59.26.	2/100	10 MF	SAL 16V						LATOS MESTIGOS	-
C 16	59.22	,5404	100MF	EL 25V			Q4	50,03,0350	J-N-FET) J442F or MPF4392	5×,N
C 47	59.26	2400	40 AF	SAL 16V			Q5	50.03.0350	J-N-FET		
C 48	59.26.		10 µF	SAL 16V			Q6	50.03.0350	J-N-FET)	- 1
C 49			1005				0.7	50.03.0545	P- N- P	*	an
	59.22		عبر 100AF			1			P-N-P	*	
C 20	59.26.		33 MF	SAL 10V			0.8	50.03.0545			an
C 24	59.26	2100	10 uF	SAL 16V			0.9	50,03,0545	P-N-P	*	q.
C 22	59.26.		1,uF	SAL 40V			Q.40	50.03.0340	N-P-N	*	av
C 23			/00 pF	CER 5%			Q44	50,03.0495	N-P-N	BDM35-46 or equivalent	S,M
				EL 2SV		1 🗀	Q42	50.03.0540	P-N-P	BD136-16 or equivalent	5,4
C 24	59.22		100 µF			1 🗕			N-P-N		
C 25			F مر 100م	EL 25V		l	Q43	50.03.0495		BD135-16 or equivalent	5, 11,
C 26	59.06		6,8 nF	PE 10%		ΙL	Q/4	50.03,0540	P-N-P	BD136-16 or equivalent	5,4
C 27	59.22	.54.04	100 JuF	EL 25V		I L	G/15	50.03.0495	N-D-N	BD435-46 or equivalent	S, M,
C 28	59.22		100 µF	EL 25V			Q16	50.03.0540	P-N-P	BD130-16 or equivalent	SH,
C 29		,2100	10 µF	SAL 16 V		1 🗀	Q.17	50,03,0495	N-P-N	BD435-46 or equivalent	S, M,
_			710 /41	312 701		I IINC	I DA		1		
	ATE	NAME				Ī	DA	TE NAME	Ex Ex	ar M Motorola	
3				_ECTROLYTIC			-				
3			PE P	DLYESTER		3				netics Sx Siliconix	
2)			CER CE	E R A MIC		2				theon N National Sewico	
									T1 Tex	os lastruments * universal type 13>.	660
 			SAL SO	LID ALUMINIUM LACQUERED		1 10		1			
D	H-82	мц	SAL SO	IFID YENNININM FYCORESED			24-0/	1-82 My		mens the	(60 >40V
D 04-0 STU	DER C.I		FOR UNIT	2.CH PL 1.942,420	PAGE / OF 3	9	BTWE	C.R. MON	S Sie	2CH PL 1.912,420 PAC	iE 3 OF
D D 04-0	DER C.	R, MON IT	FOR UNIT		PAGE / OF 3	9	*	PART NO 50.03.0340	S Sie TOR UNIT	2 CH PL 4.942,420 PAG SPECIFICATIONS/EQUIVALENT *	iE 3 OF
D 04-0 STUI	DER C.	R, MON IT	FOR UNIT	2.CH PL 1.912,420 SPECIFICATIONS/EQUIVALENT		9	BTUE	PART NO 50.03.0340 50.03.0545	S Sie TOR UNIT	2 CH PL 1.912.420 PAGE SPECIFICATIONS/EQUIVALENT	iE 3 OF
D 04-0 STUI	PAR 59.22	R, MON 17 RT NO 1.54.04	VALUE 100 MF	2 CH PL 1.912.420 SPECIFICATIONS/EQUIVALENT EL 25V		9	POS NO Q 18 Q 19	PART NO 50.03.0340	S Sie TOR UNIT	2 CH PL 4.942,420 PAG SPECIFICATIONS/EQUIVALENT *	SE 3 OF
D 04-0 STUI NO POS N C 30	PAR 59.22 59.06	R, MON 17	VALUE 100 MF	2 CH PL 1.942.420 SECIFICATIONS/EQUIVALENT EL 25V PE 10%		9	POS NO	PART NO 50.03.0340 50.03.0545	S Sie TOR UNIT	2 CH PL 1.912.420 PAGE SPECIFICATIONS/EQUIVALENT	SE 3 OF
D 04-0 STUI	PAR 59.22 59.06 59.06	R, MON IT NO 15404 00224 00224	VALUE 100 µF 220 nF 220 nF	2.CH PL 1.942.420 SPECIFICATIONS/EQUIVALENT EL 25V PE 40% PE 40%		9	POS NO Q 18 Q 19	PART NO 50.03.0340 50.03.0545	S Sie TOR UNIT	2 CH PL 1.912.420 PAGE SPECIFICATIONS/EQUIVALENT	SE 3 OF
D 04-0 STUI NO POS N C 30 C 32 C 33 C 34	PAR 59.22 59.06 59.06 59.06	R, MON IT 15104 15124 10224 15104	VALUE 100 µF 220 nF 220 nF 100 µF	PE 40% PE 425 V		9	POS NO Q 48 Q 49 Q 20	PART NO 50.03.0340 50.03.0340 50.03.0340	S Sig	* 2 CH PL // 19/12, 1420 PAG *** ** ** ** ** ** ** ** **	SE 3 OF
D 04-0 STUI NO POS N C 30 C 32 C 33 C 34 C 35	DER C.1 PAR 59.22 59.06 59.06 59.22 59.22	R, MON IT 15101 15101 10224 10224 15101 14221	220nF 220nF 220nF 220nF 220nF 220nF	PE 40% PE 40% PE 40% PE 40% PE 40% PE 40% PE 40% PE 40% PE 40% PE 40%		9	PPOS NO Q 48 Q 49 Q 20	PART NO 50.03.03+0 50.03.0545 50.03.03+0 57.44.4682	S Sig TOR UNIT VALUE N-P-N P-N-P N-P-N	## L: 900 mA , BC 337-26 or equiv.	SE 3 OF
D 04-0 STUI NO POS N C 30 C 32 C 33 C 34	DER C.1 PAR 59.22 59.06 59.06 59.22 59.22	R, MON IT 15104 15124 10224 15104	VALUE 100 µF 220 nF 220 nF 100 µF	PE 40% PE 425 V		9	POS NO Q48 Q49 Q20 R4 R2	PART NO 50.03.0340 50.03.0545 50.03.0545 50.03.0340 57.44.4682 57.44.4682	S Sie TOR UNIT VALUE N-P-N P-N-P N-P-N 6,3 k 6,8 k	## 2CH PL // 1942,420 PAC ## ##	SE 3 OF
D 04-0 STUI ND POS N C 30 C 32 C 33 C 34 C 35 C 36	DER C.I	R, MON IT 15/10/1 10/0224 10/0224 15/10/1 15/10/1 14/12/1	VALUE 400 µF 220 nF 220 nF 400 µF 220 µF 220 µF 220 µF	PE 40% PE 40% PE 40% PE 40% PE 40% PE 40% PE 40% PE 40% PE 40% PE 40%		9	POS NO Q48 Q49 Q20 R4 R2	PART NO 50.03.03+0 50.03.0545 50.03.03+0 57.44.4682	S Sie TOR UNIT VALUE N-P-N P-N-P N-P-N 6,3 k 6,8 k	## L: 900 mA , BC 337-26 or equiv.	SE 3 OF
0 04-0 STUI C 30 C 32 C 33 C 34 C 35 C 36 C 37	DER C.I	R, MON IT 15 1 0 1 15 1 0 2 2 4 15 1 0 3 15 2 2 3 15 2 2 3 15 2 2 3 15 2 2 3	VALUE 400 µF 220 nF 220 nF 400 µF 220 nF 220 µF 220 µF 220 µF	2.CH PL 1.942.420 ***********************************		9	POS NO Q48 Q49 Q20 R 4 R 2 R 3	PART NO 50.03.03+0 50.03.03+0 50.03.03+0 50.03.03+0 57.44.4682 57.44.4682	S Sie TOR UNIT VALUE N-P-N P-N-P N-P-N 6,8 k 6,8 k 6,8 k	*** PL 4342,420 PAC *** ** ** ** ** ** ** ** **	SE 3 OF
D 04-0 STUI ND POS N C 30 C 32 C 33 C 34 C 35 C 36	DER C.I	R, MON IT 15/10/1 10/0224 10/0224 15/10/1 15/10/1 14/12/1	VALUE 400 µF 220 nF 220 nF 400 µF 220 µF 220 µF 220 µF	2 CH PL 1342,420 PEGIFICATIONS/FOUNTALEYT EL 25V EL 25V EL 46V EL 46V		9	POS NO Q 48 Q 49 Q 20 R 4 R 2 R 3 R 4	PART NO 50.03.0340 50.03.0345 50.03.0340 50.03.0340 57.44.4682 57.44.4682 57.44.4682 57.44.4682	S Sid TOR UNIT VALUE N-P-N P-N-P N-P-N 6,8 k 6,8 k 6,8 k 6,8 k	## 2CH PL // 1942,420 PAC ## ##	SE 3 OF
0 04-0 STUI C 30 C 32 C 33 C 34 C 35 C 36 C 37	DER C.I	R, MON IT 15 1 0 1 15 1 0 2 2 4 15 1 0 3 15 2 2 3 15 2 2 3 15 2 2 3 15 2 2 3	VALUE 400 µF 220 nF 220 nF 400 µF 220 nF 220 µF 220 µF 220 µF	2.CH PL 1.942.420 ***********************************		9	PPOS NO Q48 Q49 Q20 R 4 R 2 R 3 R 4 R 5	PART NO 50.03.0340 50.03.0340 50.03.0545 50.03.0545 50.03.0340 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682	S Sid TOR UNIT	*** PL 4342,420 PAC *** ** ** ** ** ** ** ** **	SE 3 OF
0 04-0 STUI C 30 C 32 C 33 C 34 C 35 C 36 C 37	DER C.I	R, MON IT 15 1 0 1 15 1 0 2 2 4 15 1 0 3 15 2 2 3 15 2 2 3 15 2 2 3 15 2 2 3	VALUE 400 µF 220 nF 220 nF 400 µF 220 nF 220 µF 220 µF 220 µF	2.CH PL 1.942.420 ***********************************		9	PPOS NO Q48 Q49 Q20 R4 R2 R3 R4 R5	PART NO 50.03.0340 50.03.0545 50.03.0545 50.03.0545 50.03.0340 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682	S Sid TOR UNIT	### ### ### ### ### ### ### ### #### ####	SE 3 OF
0 04-0 STUI C 30 C 32 C 33 C 34 C 35 C 36 C 37	DER C.I	R, MON IT 15 1 0 1 15 1 0 2 2 4 15 1 0 3 15 2 2 3 17 2 2 3 17 2 2 3	VALUE 400 µF 220 nF 220 nF 400 µF 220 nF 220 µF 220 µF 220 µF	2.CH PL 1.942.420 ***********************************		9	PPOS NO Q48 Q49 Q20 R4 R2 R3 R4 R5 R6	PART NO 50.03.03+0 50.03.03+0 50.03.0545 50.03.0340 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4683	S Sid TOR UNIT	*** PL 4342,420 PAC *** ** ** ** ** ** ** ** **	SE 3 OF
0 04-0 STUI C 30 C 32 C 33 C 34 C 35 C 36 C 37	DER C.I	R, MON IT 15 1 0 1 15 1 0 2 2 4 15 1 0 3 15 2 2 3 17 2 2 3 17 2 2 3	VALUE 400 µF 220 nF 220 nF 400 µF 220 nF 220 µF 220 µF 220 µF	2.CH PL 1.942.420 ***********************************		9	PPOS NO Q48 Q49 Q20 R 4 R 2 R 3 R 4 R 5 R 6 R 7	PART NO 50.03.0340 50.03.0545 50.03.0545 50.03.0545 50.03.0340 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682	S Sid TOR UNIT	### ### ### ### ### ### ### ### #### ####	SE 3 OF
D 04-0 STUI NO POS N C 3C C 32 C 33 C 34 C 35 C 36 C 37 C 38	PAR C.I	R, MON IT 154 04 20224 20224 254 04 24224 24224 24224	VALUE 100 MF 220 MF 220 MF 220 MF 220 MF 220 MF 220 MF 220 MF 220 MF 220 MF	2 CH PL 1.942.420 ###################################		9	R 4 R 2 R 3 R 4 R 5 R 6 R 7	PART NO 50.03.0340 50.03.0545 50.03.0545 50.03.0545 57.44.4682	S Sid TOR UNIT	### ### ### ### ### ### ### ### #### ####	SE 3 OF
D 04-0 STUI ND POS NO C 30 C 30 C 30 C 32 C 33 C 34 C 35 C 36 C 37 C 38	PAR C.I	R, MON IT 15 NO 15 NO 15 NO 16 NO 17 NO 18 NO	VALUE 100 MF 220 MF 220 MF 220 MF 220 MF 220 MF 220 MF 220 MF 220 MF 220 MF 4N H H H H H H H H H H H H H H H H H H H	2.CH PL 1.942.420 ###################################		9	R 4 R 2 R 3 R 4 R 5 R 6 R 7 R 8 R 8	PART NO 50.03.0340 50.03.0340 50.03.0545 50.03.0340 57.44.4682	5 Sid TOR UNIT	PECPICATIONS TOUVALENT * # 1, 800 m A , BC 337 - 26 or equiv. 2 2 2 2 2 4 2 4 40 % Trim - Pot 415	SE 3 OF
D 04-0 STUII C 30 C 30 C 32 C 33 C 34 C 35 C 36 C 37 C 38 D 4	DER C.I	R, MONIT 154 04 1524 04 1524 04 154 04 14224 14224 14224 14224 14224 14224	VALUE 100 µF 220 µF 220 µF 220 µF 220 µF 220 µF 220 µF 220 µF 220 µF 220 µF 40 µF	2 CH PL 1.942.420 ***CHICATIONS/GOUVALENT** EL 25V PE 40% PE 40% EL 46V EL 46V EL 46V EL 46V or equivalent** or equivalent**		9	POS NO Q48 Q49 Q20 R4 R2 R3 R4 R5 R6 R7 R8	PART NO 50.03.03 + 0 50.03.03 + 0 50.03.03 + 0 50.03.03 + 0 50.03.03 + 0 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682	S Six TOR UNIT		SE 3 OF
D 04-(STU) C 3C C 3C C 3C C 3C C 3S C 3F C 3A C 3F C 3B	PAR C.I. 59.02 59.06 59.02 59.02 59.02 59.02 59.02 59.02 59.02 59.02 59.00 59.00 59.00 59.00	R, MON IT NT NO .5104 .0224 .0224 .5404 24224 24224 24224 24224 24224 24224 24224	VALUE 100 AF 220 AF 220 AF 220 AF 220 AF 220 AF 220 AF 220 AF 220 AF 310 AF 410 AF	PE 1.342.420 PECIFICATIONS/COUNTALEYF EL 25V PE 40% PE 40% EL 45V EL 46V EL 46V EL 46V or equivalent or equivalent		9	POS NO Q48 Q49 Q20 R 4 R 2 R 3 R 4 R 5 R 6 R 7 R 8 R 8 R 9 R 40 R 40 R 40 R 40 R 40 R 40 R 5 R 6 R 7 R 8 R 8 R 8 R 8 R 8 R 8 R 8 R 8 R 8 R 8	PART NO 50.03.03+0 50.03.03+0 50.03.03+0 50.03.03+0 50.03.03+0 57.44.4692 57.44.4692 57.44.4682	S Sid TOR UNIT	PECPICATIONS TOUVALENT * # 1, 800 m A , BC 337 - 26 or equiv. 2 2 2 2 2 4 2 4 40 % Trim - Pot 415	SE 3 OF
D) 04-(PAR C.I. 59.02 59.06 59.02 59.02 59.02 59.02 59.02 59.02 59.02 59.02 59.00 59.00 59.00 59.00	R, MONIT 154 04 1524 04 1524 04 154 04 14224 14224 14224 14224 14224 14224	VALUE 100 MF 220 MF 220 MF 220 MF 220 MF 220 MF 220 MF 220 MF 220 MF 220 MF 220 MF 220 MF 220 MF 240 MF 4N 14448 4N 14448 4N 14448	2 CH PL 1.942.420 ***CHICATIONS/GOUVALENT** EL 25V PE 40% PE 40% EL 46V EL 46V EL 46V EL 46V or equivalent** or equivalent**		9	Pos NO Pos No P	FART NO 50.03.03 # 0 50.03.03 # 0 50.03.03 # 0 50.03.03 # 0 57.44.46 # 2	S Sie TOR UNIT	PECPICATIONS TOUVALENT * # 1, 800 m A , BC 337 - 26 or equiv. 2 2 2 2 2 4 2 4 40 % Trim - Pot 415	SE 3 OF
D 04-(STU) C 3C C 3C C 3C C 3C C 3S C 3F C 3A C 3F C 3B	PAR 59.22 59.06 59.06 59.02 59.22 59.22 59.22 59.22 50.04 50.04 50.04 50.04	R, MON IT NT NO .5104 .0224 .0224 .5404 24224 24224 24224 24224 24224 24224 24224	VALUE 100 AF 220 AF 220 AF 220 AF 220 AF 220 AF 220 AF 220 AF 220 AF 310 AF 410 AF	PE 1.342.420 PECIFICATIONS/COUNTALEYF EL 25V PE 40% PE 40% EL 45V EL 46V EL 46V EL 46V or equivalent or equivalent		9	POS NO Q48 Q49 Q20 R 4 R 2 R 3 R 4 R 5 R 6 R 7 R 8 R 8 R 9 R 40 R 40 R 40 R 40 R 40 R 40 R 5 R 6 R 7 R 8 R 8 R 8 R 8 R 8 R 8 R 8 R 8 R 8 R 8	PART NO 50.03.0340 50.03.0340 50.03.0340 50.03.0340 57.44.4622 57.44.4622 57.44.4622 57.44.4622 57.44.4623 57.44.4623 57.44.4623 57.44.4623 57.44.4623 57.44.4623 57.44.4623 57.44.4623 57.44.4623 57.44.4623 57.44.4623 57.44.4623	S Sid TOR UNIT	PECPICATIONS TOUVALENT * # 1, 800 m A , BC 337 - 26 or equiv. 2 2 2 2 2 4 2 4 40 % Trim - Pot 415	SHOV
D 04-(STU) 04-(STU) 05-04-(C30-05-05-05-05-05-05-05-05-05-05-05-05-05	PAR C.I. 59.22 59.06 59.02 59.22 59.22 59.22 59.22 50.04 50.04 50.04 50.04 50.04	R, MON IT 151 NO 1524 10224 10224 10224 10224 10224 10224 10224 10224 10224 10224 10224 10224 10224 10224 10225 1025 1025 1025 1025	VALUE 100 µF 220 µF 220 µF 220 µF 220 µF 220 µF 220 µF 220 µF 220 µF 340 µF 340 µF 340 µF 340 µF 340 µF 340 µF 340 µF 340 µF 340 µF 340 µF 340 µF 340 µF	PE 1.942.420 PE 1.942.420 PE 25V PE 1.05 PE 1.05 EL 25V EL 16V EL 16V EL 16V EL 16V or equivalent or equivalent		9	Pos NO Pos No P	PART NO 50.03.0340 50.03.0340 50.03.0340 50.03.0340 57.44.4622 57.44.4622 57.44.4622 57.44.4622 57.44.4623 57.44.4623 57.44.4623 57.44.4623 57.44.4623 57.44.4623 57.44.4623 57.44.4623 57.44.4623 57.44.4623 57.44.4623 57.44.4623	S Sie TOR UNIT	PECPICATIONS TOUVALENT * # 1, 800 m A , BC 337 - 26 or equiv. 2 2 2 2 2 4 2 4 40 % Trim - Pot 415	SE 3 OF
04-05 No. POS	59.04 59.22 59.06 59.06 59.02 59.22 59.22 59.22 59.22 59.22 59.22 59.22 59.22	R, MON IT NO 154 NO 154 NO 1554 OA 155	VALUE 400 MF 220 MF 220 MF 220 MF 220 MF 220 MF 220 MF 220 MF 220 MF 220 MF 220 MF 220 MF 240 MM 40448 40 MM 40448 40 MM 40448 40 MM 40448 40 MM 40448 40 MM 40448 40 MM 40448 40 MM 40448 40 MM 40448 40 MM 40448 40 MM 40448 40 MM 40448 40 MM 40448 40 MM 40448 40 MM 40448 40 MM 40448 40 MM 40448 40 MM 40448 40 MM 40448	PE 10% PE 40% PE 40% PE 40% EL 25V EL 46V EL 46V EL 46V et 46V et 76V et		9	POS NO Q 48 Q 49 Q 20 P 4 R 2 R 3 R 4 R 5 R 6 R 7 R 8 R 9 R 4 R 7 R 7 R 8 R 9 R 4 R 7 R 7 R 8 R 7 R 7 R 8 R 7 R 7 R 7 R 7	FART NO 50.03.034 0 50.03.034 0 50.03.034 0 50.03.034 0 50.03.034 0 50.03.034 0 57.44.4682 57.	S Sie TOR UNIT VALUE N-P-N P-N-P N-P-N 6,9 k 6,8 k 6,8 k 6,9 k 22 k 22 k 47 k 47 k 47 k 42 k 22 k 22 k 22 k 22 k 22 k 22 k 23 k	*** *** *** ** ** ** ** ** **	SE 3 OF
C32 C32 C33 C34 C35 C35 C36 C35 C36 C37 C38 C36 C37 C38 C36 C37 C38 C36 C37 C38 C36 C37 C38 C36 C36 C36 C36 C36 C36 C36 C36 C36 C36	59.04 59.22 59.06 59.22 59.22 59.22 59.22 59.22 59.22 59.22 59.22 59.22 59.22	R, MON IT NO 151 NO 151 NO 10224 10224 10224 10425 10425 10425 10425 10425 10425 10425 10425	VALUE 400 pc 400 pc 220 pc 220 pc 220 pc 220 pc 220 pc 220 pc 220 pc 40 uuuu 40 uuu 40 uuuu 40 uuu	PE 10% PE		9	POS NO Q 48 Q 48 Q 48 Q 49 Q 20 R 4 R 2 R 3 R 4 R 5 R 6 R 7 R 8 R 9 R 40 R 41 R 42 R 43 R 44 R 45	PART NO 50.03.0340 50.03.0546 50.03.0546 50.03.0546 50.03.0340 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4622 57.44.4622 57.44.4622 57.44.4622 57.44.4622 57.44.4622 57.44.4622 57.44.4622 57.44.4623 57.44.4623 57.44.4623 57.44.4623 57.44.4623	S Sie TOR UNIT VALUE N-P-N P-N-P N-P-N 6,8 k 6,8 k 6,8 k 22 k 22 k 42 k 47 k 47 k 22 k 22 k 22 k 33 k	### ### ### ### ### ### ### ### ### ##	SE 3 OF
04-05 No. POS	59.04 59.22 59.06 59.22 59.22 59.22 59.22 59.22 59.22 59.22 59.22 59.22 59.22	R, MON IT NO 154 NO 154 NO 1554 OA 155	VALUE 400 MF 220 MF 220 MF 220 MF 220 MF 220 MF 220 MF 220 MF 220 MF 220 MF 220 MF 220 MF 240 MM 40448 40 MM 40448 40 MM 40448 40 MM 40448 40 MM 40448 40 MM 40448 40 MM 40448 40 MM 40448 40 MM 40448 40 MM 40448 40 MM 40448 40 MM 40448 40 MM 40448 40 MM 40448 40 MM 40448 40 MM 40448 40 MM 40448 40 MM 40448 40 MM 40448	PE 10% PE 40% PE 40% PE 40% EL 25V EL 46V EL 46V EL 46V et 46V et 76V et		9	Pros NO Q 48 Q 49 Q 20 R 4 R 2 R 3 R 4 R 5 R 7 R 7 R 7 R 7 R 7 R 7 R 7 R 7 R 7	FART NO 50.03.034 0 50.03.034 5 50.03.034 5 50.03.034 5 50.03.034 5 50.03.034 9 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4623 57.44.4633	5 Sie TOR UNIT VALUE N-P-N P-N-P P-N-P N-P-N 6/8 k 6/8 k 6/8 k 22 k 22 k 22 k 22 k 22 k 22 k 22 k 2	PECPICATION/FOUNALENT * # \(\) \(\) \(SE 3 OF
C32 C32 C33 C34 C35 C35 C36 C35 C36 C37 C38 C36 C37 C38 C36 C37 C38 C36 C37 C38 C38 C38 C38 C39 C39 C39 C39 C39 C39 C39 C39 C39 C39	59.04 59.22 59.06 59.22 59.22 59.22 59.22 59.22 59.22 59.22 59.22 59.22 59.22	R, MON IT NO 151 NO 151 NO 10224 10224 10224 10425 10425 10425 10425 10425 10425 10425 10425	VALUE 400 pc 400 pc 220 pc 220 pc 220 pc 220 pc 220 pc 220 pc 220 pc 40 uuuu 40 uuu	PE 10% PE		9	R10 R41 R42 R43 R44 R45 R46 R47	PART NO. 50.03.03 ±0 50.03.03 ±0 50.03.03 ±0 50.03.05 ±5 50.03.03 ±0 57.44.46 ±2 57.44 ±2 57.44.46 ±2 57.44 ±2 57.44 ±2 57.44 ±2 57.44.46 ±2 57.44	S Sie TOR UNIT VALUE N-P-N P-N-P N-P-N 6,8 k 6,8 k 6,8 k 22 k 22 k 42 k 4,7 k 4,7 k 22 k 22 k 22 k 22 k 22 k 22 k 22 k 2	### ### ### ### ### ### ### ### ### ##	SE 3 OF
C32 C32 C33 C34 C35 C35 C36 C35 C36 C37 C38 C36 C37 C38 C36 C37 C38 C36 C37 C38 C38 C38 C38 C39 C39 C39 C39 C39 C39 C39 C39 C39 C39	59.04 59.22 59.06 59.22 59.22 59.22 59.22 59.22 59.22 59.22 59.22 59.22 59.22	R, MON IT NO 151 NO 151 NO 10224 10224 10224 10425 10425 10425 10425 10425 10425 10425 10425	VALUE 400 pc 400 pc 220 pc 220 pc 220 pc 220 pc 220 pc 220 pc 220 pc 40 uuuu 40 uuu	PE 10% PE		9	R 4	FART NO 50.03.0340 50.03.0345 50.03.0345 50.03.0345 50.03.0345 50.03.0349 57.44.4682 57.44.468	S Sie TOR UNIT VALUE N-P-N P-N-P N-P-N 6,8 k 6,8 k 6,8 k 6,8 k 22 k 22 k 22 k 47 k 47 k 47 k 22 k 22 k 22 k 22 k 22 k 22 k 22 k 2	PECPICATION/FOUNALENT * # \(\) \(\) \(SE 3 OF
C32 C32 C33 C34 C35 C35 C36 C35 C36 C37 C38 C36 C37 C38 C36 C37 C38 C36 C37 C38 C38 C38 C38 C39 C39 C39 C39 C39 C39 C39 C39 C39 C39	PAR 53.22 53.06 53.22 53.06 53.22 53.22 53.22 53.22 53.22 53.22 53.22 53.22 53.22 53.22 53.22 53.22	R, MON IT NO 151 NO 151 NO 10224 10224 10224 10425 10425 10425 10425 10425 10425 10425 10425	VALUE 400 pc 400 pc 220 pc 220 pc 220 pc 220 pc 220 pc 220 pc 220 pc 40 uuuu 40 uuu	PE 10% PE		9	R10 R41 R42 R43 R44 R45 R46 R47	PART NO. 50.03.03 ±0 50.03.03 ±0 50.03.03 ±0 50.03.05 ±5 50.03.03 ±0 57.44.46 ±2 57.44 ±2 57.44.46 ±2 57.44 ±2 57.44 ±2 57.44 ±2 57.44.46 ±2 57.44	S Sie TOR UNIT VALUE N-P-N P-N-P N-P-N 6,8 k 6,8 k 6,8 k 22 k 22 k 42 k 4,7 k 4,7 k 22 k 22 k 22 k 22 k 22 k 22 k 22 k 2	PECPICATION/FOUNALENT * # \(\) \(\) \(SE 3 OF
D1 04-04-05 No Pos No P	59.04 59.22 59.06 59.06 59.22 59.22 59.22 59.22 50.04 50.04 50.04 50.04	R. MONIT 15 NO 15 10 M 15 10 M 15 10 M 15 10 M 15 10 M 15 10 M 15 10 M 16 M 16 M	VALUE 400 AF 220 NF 220 NF 220 NF 220 NF 220 AF 220 AF 220 AF 320 AF 4N 14448 4N 14448 4N 14448 4N 14448 4N 14448	PE 10% PE 10% PE 10% PE 25V EL 25V EL 46V EL 46V or equivalent or equivalent or equivalent or equivalent or equivalent or equivalent or equivalent or equivalent or equivalent or equivalent or equivalent or equivalent or equivalent or equivalent or equivalent or equivalent or equivalent or equivalent or equivalent		9	POS NO Q18 Q18 Q19 Q20 R1 R2 R3 R4 R5 R6 R7 R8 R9 R40 R41 R41 R45 R46 R41 R45 R46 R46 R47 R48 R48 R48 R48 R48 R48 R49 R40 R40 R40 R40 R40 R40 R40 R40	PART NO 50.03.03 +0 50.03.03 +0 50.03.05 45 50.03.05 45 50.03.03 +0 57.44.46 42 57.44.46 42 57.44.46 82 57.44.46 82 57.44.46 82 57.44.46 82 57.44.46 82 57.44.46 82 57.44.46 82 57.44.46 82 57.44.46 83	S Sie TOR UNIT VALUE N-P-N P-N-P N-P-N 6,8 k 6,8 k 6,8 k 6,8 k 22 k 22 k 22 k 47 k 47 k 47 k 22 k 22 k 22 k 22 k 22 k 22 k 22 k 2	PECPICATION/FOUNALENT * # \(\) \(\) \(SE 3 OF
D O4-(0 Fos N No Fos N No Fos N No Fos N O4-(0 Fos N O	59.04 59.22 59.06 59.06 59.22 59.22 59.22 59.22 50.04 50.04 50.04 50.04	R, MON IT 15 NO 15 NO 15 NO 16 NO 1	VALUE 400 AF 220	PL 1.942.420 PE 10% PE 40% PE 40% PE 40% PE 40% EL 46V EL 46V EL 46V EL 46V EL 60V Or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent		9	Pros NO Q.18 Q.18 Q.19 Q.20 R. 1 R. 2 R. 3 R. 4 R. 5 R. 6 R. 7 R. 9 R. 10 R. 11 R. 12 R. 14 R. 15 R. 14 R. 15 R. 16 R. 17 R. 18	FART NO 50.03.034 0 50.03.034 0 50.03.034 0 50.03.034 0 50.03.034 0 50.03.034 0 57.44.4682 57.	S Sie TOR UNIT VALUE N-P-N P-N-P N-P-N 6,9 k 6,8 k 6,8 k 22 k 22 k 22 k 22 k 22 k 22 k 22 k 2	PECPICATION/FOUNALENT * # \(\) \(\) \(SE 3 OF
D1-10-10-10-10-10-10-10-10-10-10-10-10-10	DEER C.I. PARENTE C.I. 59.22 58.06 58.06 58.06 58.02 59.22 59.22 59.22 59.22 59.04 50.04 50.04 50.04 50.04 50.04 50.04 50.04 50.04 50.04 50.04 50.04 50.04	R, MON IT TWO 1.51 0M 1.52 1M 1.52 1M 1.52 1M 1.53 1M 1.54 1M 1.55 1M	VALUE 100 AF 220 AF 220 AF 220 AF 220 AF 220 AF 220 AF 220 AF 220 AF 220 AF 30 AN UPUR 4N UPUR 4N UPUR 4N UPUR 4N UPUR 4N UPUR 4N UPUR 4N UPUR 4N UPUR 4N UPUR 50 AN	PL 1.942.420 PE 10% PE 40% PE 40% PE 40% PE 40% EL 46V EL 46V EL 46V EL 46V EL 60V Or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent	MFR	9	POS NO P	PART NO. 50.03.03 ±0 50.03.03 ±0 50.03.03 ±0 50.03.05 ±6 50.03.03 ±0 57.44.46 ±0.05	S Sie TOR UNIT VALUE N-P-N P-N-P N-P-N 6/8 k 6/8 k 6/8 k 6/8 k 2/2 k	PECPICATION/FOUNALENT * # \(\) \(\) \(SE 3 OF
D 04-(PAR C.I. PAR C.	R. MON IT IT IT IT IT IT IT IT IT IT IT IT IT	VALUE 100 AF 220 AF AN HUHB A	PL 1.942.420 PE 10% PE 40% PE 40% PE 40% PE 40% EL 46V EL 46V EL 46V EL 46V EL 60V Or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent	MFR MFR T T T T T T T T T T T T T T T T T T T	9	Pros No. Q.48 Q.49 Q.20 Q.48 Q.20 R.4 R.2 R.5 R.6 R.7 R.4 R.4 R.4 R.4 R.4 R.4 R.4 R.4 R.4 R.4	FART NO 50.03.0340 50.03.0345 50.03.0345 50.03.0345 50.03.0345 50.03.0345 57.44.4682 57.44.468	S Sie TOR UNIT VALUE N-P-N P-N P-N P-N P-N P-N P-N P-N P-N P	### PL 1912, 1420 FACE ### ### 1909 1943 1943 1945 1945 2 % 2 % 2 % 10% Trim-Pot 156 45 2 % 2 %	SE 3 OF
D OH OH OH OH OH OH OH	DEEM C.I. PARKET ST. C.I. 59.02 59.06 59.06 59.06 59.02 59.02 59.02 59.02 59.02 59.02 59.02 59.02 59.02 59.02 59.02 50.04 50.04 50.04 50.04 50.04 50.04 50.04 50.04 50.04 50.04 50.04 50.04 50.04	R. MON IT NO	OR UNIT VALUE 400 AF 220 AF 2	PL 1.942.420 PE 10% PE 40% PE 40% PE 40% PE 40% EL 46V EL 46V EL 46V EL 46V EL 60V Or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent	MFR	9	POS NO Q48 Q49 Q20 R2 R4 R2 R5 R6 R7 R8 R4 R4 R45 R46 R47 R48 R49 R20 R22 R23	PART NO \$0.03.0340 \$0.03.0545 \$0.03.0545 \$0.03.0545 \$0.03.0545 \$5.03.0340 \$7.44.4622 \$7.44.4623 \$7.44.4623 \$7.44.4623 \$7.44.4623 \$7.44.4623 \$7.44.4623 \$7.44.4623 \$7.44.4623 \$7.44.4623 \$7.44.4633 \$7.44.4633 \$7.44.4633 \$7.44.4633 \$7.44.4633 \$7.44.4633 \$7.44.4633 \$7.44.4633 \$7.44.4633	S Sie TOR UNIT VALUE N-P-N-P N-P-N P-N-P N-P-N 6,8 k 6,8 k 6,8 k 22 k 22 k 22 k 22 k 22 k 22 k 22 k 2	PECPICATION/FOUNALENT * # \(\) \(\) \(SE 3 OF
D 04-(DEEM C.I. PARKET ST. C.I. 59.02 59.06 59.06 59.06 59.02 59.02 59.02 59.02 59.02 59.02 59.02 59.02 59.02 59.02 59.02 50.04 50.04 50.04 50.04 50.04 50.04 50.04 50.04 50.04 50.04 50.04 50.04 50.04	R. MON IT IT IT IT IT IT IT IT IT IT IT IT IT	VALUE 100 AF 220 AF AN HUHB A	PL 1.942.420 PE 10% PE 40% PE 40% PE 40% PE 40% EL 46V EL 46V EL 46V EL 46V EL 60V Or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent	T T T Co. T I Co. T I Co. T I	INC	POS NO Q 48 Q 48 Q 49 Q 20 R 4 R 2 R 3 R 4 R 5 R 6 R 7 R 40 R 41 R 45 R 46 R 47 R 48 R 49 R 40 R 41 R 45 R 40 R 41 R 45 R 41 R 45 R 42 R 43 R 44 R 45 R 47 R 48 R 49 R 49 R 40 R 41 R 41 R 45 R 41 R 42 R 43 R 43 R 44 R 45 R 47 R 48 R 49 R 49 R 40 R 40 R 41 R 41 R 41 R 41 R 41 R 41 R 41 R 41	FART NO. 50.03.034 b 50.03.034 b 50.03.034 b 50.03.034 b 50.03.034 b 50.03.034 b 57.44.4642 57.44.4642 57.44.4642 57.44.462	S Sie TOR UNIT VALUE N-P-N P-N-P N-P-N 6:8 k 6:8 k 6:8 k 22 k 22 k 22 k 22 k 22 k 22 k 22 k 2	### Pt. 1942,420 FAC ### ### 1900mA 86337-26 or equiv. 2 % 2 % 2 % 40 % Trim-Pot 456 457 2 % 2 %	SE 3 OF
D) 04-(58.024 58.025	R, MON 17 NO 1551 04 10224 10224 10224 10224 10224 10224 10224 10224 10224 10224 10224 10224 10224 10224 10224 10224 10224 10225 102	OR UNIT VALUE 400 AF 220 AF 2	PL 1.942.420 PE 10% PE 40% PE 40% PE 40% PE 40% EL 46V EL 46V EL 46V EL 46V EL 60V Or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent	T T T Co. T I Co. T I Co. T I	INC	POS NO Q48 Q49 Q20 R2 R4 R2 R5 R6 R7 R8 R4 R4 R45 R46 R47 R48 R49 R20 R22 R23	FART NO. 50.03.0340 50.03.0345 50.03.0345 50.03.0345 50.03.0345 50.03.0345 57.44,4682	S Sie TOR UNIT VALUE N-P-N-P N-P-N P-N-P N-P-N 6,8 k 6,8 k 6,8 k 22 k 22 k 22 k 22 k 22 k 22 k 22 k 2	### PL 1912, 1420 FACE ### ### 1909 1943 1943 1945 1945 2 % 2 % 2 % 10% Trim-Pot 156 45 2 % 2 %	SE 3 OF
Display	PAR	R. MON IT NO 15 NO	VALUE 100 AF 220	PL 1.942.420 PE 10% PE 40% PE 40% PE 40% PE 40% EL 46V EL 46V EL 46V EL 46V EL 60V Or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent or equivatent	MFR	S	R 1	FART NO 50.03.0340 50.03.0345 50.03.0545 50.03.0545 50.03.0545 50.03.0340 57.44.9692 57.44.9692 57.44.9692 57.44.9692 57.44.9692 57.44.923	S Sie TOR UNIT VALUE N-P-N P-N-P N-P-N 6:8 k 6:8 k 6:8 k 22 k 22 k 22 k 22 k 22 k 22 k 22 k 2	### Pt. 1942,420 FAC ### ### 1900mA 86337-26 or equiv. 2 % 2 % 2 % 40 % Trim-Pot 456 457 2 % 2 %	SE 3 OF
D 04-(58.024 58.025	R. MON 17 NO 1551 04 10224 10224 10224 10224 10224 10224 10224 10224 10224 10224 10224 10224 10224 10224 10224 10224 10224 10225 102	OR UNITE 100 JF	PE 10% PE 40% PE	T T T Co. T I Co. T I Co. T I	S	POS NO 0 248 Q 48 Q 49 Q 20 R 4 R 2 R 3 R 4 R 5 R 6 R 7 R 8 R 9 R 40 R 41 R 42 R 43 R 44 R 45 R 46 R 47 R 48 R 49 R 40 R 40 R 41 R 42 R 42 R 43 R 44 R 45 R 46 R 47 R 48 R 48 R 49 R 49 R 40 R 40 R 40 R 40 R 40 R 40 R 40 R 40	FART NO 50.03.0340 50.03.0345 50.03.0545 50.03.0545 50.03.0545 50.03.0340 57.44.9692 57.44.9692 57.44.9692 57.44.9692 57.44.9692 57.44.923	S Sie TOR UNIT VALUE N-P-N P-N-P N-P-N 6:8 k 6:8 k 6:8 k 22 k 22 k 22 k 22 k 22 k 22 k 22 k 2	### Pt. 1942,420 FAC ### ### 1900mA 86337-26 or equiv. 2 % 2 % 2 % 40 % Trim-Pot 456 457 2 % 2 %	SE 3 OF
D	PAR	R. MON IT NO 15 NO	OR UNIT 100 AF 100 AF 100 AF 100 AF 120 AF 1	PE 10% PE 40% PE 40% PE 40% PE 40% PE 40% EL 46V EL 46V EL 46V EL 46V EL 60V EL	T T T Co. T I Co. T I Co. T I		POS NO 0 248 Q 48 Q 49 Q 20 R 4 R 2 R 3 R 4 R 5 R 6 R 7 R 8 R 9 R 40 R 41 R 42 R 43 R 44 R 45 R 46 R 47 R 48 R 49 R 40 R 40 R 41 R 42 R 42 R 43 R 44 R 45 R 46 R 47 R 48 R 48 R 49 R 49 R 40 R 40 R 40 R 40 R 40 R 40 R 40 R 40	FART NO 50.03.0340 50.03.0345 50.03.0545 50.03.0545 50.03.0545 50.03.0340 57.44.9692 57.44.9692 57.44.9692 57.44.9692 57.44.9692 57.44.923	S Sie TOR UNIT VALUE N-P-N P-N-P N-P-N 6:8 k 6:8 k 6:8 k 22 k 22 k 22 k 22 k 22 k 22 k 22 k 2	### Pt. 1942,420 FAC ### ### 1900mA 86337-26 or equiv. 2 % 2 % 2 % 40 % Trim-Pot 456 457 2 % 2 %	SE 3 OF
D 04-0 05-0 05-0 05-0 05-0 05-0 05-0 05-0	PAR	R. MON IT NO 15 NO	NALUE 400 AF 120	PE 1.0% PE 1.0	T T T Co. T I Co. T I Co. T I		POS NO 0 Q 18 Q 19 Q 19 Q 19 Q 19 Q 19 Q 19 Q 19	FART NO 50.03.0340 50.03.0345 50.03.0545 50.03.0545 50.03.0545 50.03.0340 57.44.9692 57.44.9692 57.44.9692 57.44.9692 57.44.9692 57.44.923	S Sie TOR UNIT VALUE N-P-N P-N-P N-P-N 6:8 k 6:8 k 6:8 k 22 k 22 k 22 k 22 k 22 k 22 k 22 k 2	### Pt. 1942,420 FAC ### ### 1900mA 86337-26 or equiv. 2 % 2 % 2 % 40 % Trim-Pot 456 457 2 % 2 %	SE 3 OF
D	PAR	R. MON IT NO 15 NO	NALUE 400 AF 120	PE 10% PE 40% PE 40% PE 40% PE 40% PE 40% EL 46V EL 46V EL 46V EL 46V EL 60V EL	T T T Co. T I Co. T I Co. T I		POS NO 0 Q 18 Q 19 Q 19 Q 19 Q 19 Q 19 Q 19 Q 19	FART NO 50.03.0340 50.03.0345 50.03.0545 50.03.0545 50.03.0545 50.03.0340 57.44.9692 57.44.9692 57.44.9692 57.44.9692 57.44.9692 57.44.923	S Sie TOR UNIT VALUE N-P-N P-N-P N-P-N 6:8 k 6:8 k 6:8 k 22 k 22 k 22 k 22 k 22 k 22 k 22 k 2	### Pt. 1942,420 FACE ### ### 1900mA 86337-26 or equiv. 2 % 2 %	SE 3 OF
D 04-0 05-0 05-0 05-0 05-0 05-0 05-0 05-0	PAR	R. MON IT NO 15 NO	NALUE 400 AF 120	PE 1.0% PE 1.0	T T T Co. T I Co. T I Co. T I		POS NO 0 Q 18 Q 19 Q 19 Q 19 Q 19 Q 19 Q 19 Q 19	FART NO 50.03.0340 50.03.0345 50.03.0545 50.03.0545 50.03.0545 50.03.0340 57.44.9692 57.44.9692 57.44.9692 57.44.9692 57.44.9692 57.44.923	S Sie TOR UNIT VALUE N-P-N P-N-P N-P-N 6:8 k 6:8 k 6:8 k 22 k 22 k 22 k 22 k 22 k 22 k 22 k 2	### Pt. 1942,420 FACE ### ### 1900mA 86337-26 or equiv. 2 % 2 %	SE 3 OF
D1-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2	PAR	R. MON IT NO 15 NO	NALUE 400 AF 120	PE 1.0% PE 1.0	T T T Co. T I Co. T I Co. T I		POS NO 0 Q 18 Q 19 Q 19 Q 19 Q 19 Q 19 Q 19 Q 19	PART NO 50.03.03 +0 50.03.03 +0 50.03.05 +6 50.03.03 +0 50.03.05 +6 50.03.03 +0 57.44.46 +2 57.44.46 +2 57.44.46 +2 57.44.46 +2 57.44.46 +2 57.44.46 +2 57.44.46 +2 57.44.46 +2 57.44.46 +2 57.44.46 +2 57.44.46 +2 57.44.46 +3 57.44.46	S Sie TOR UNIT VALUE N-P-N P-N-P N-P-N 6:8 k 6:8 k 6:8 k 22 k 22 k 22 k 22 k 22 k 22 k 22 k 2	### Pt. 1942,420 FACE ### ### 1900mA 86337-26 or equiv. 2 % 2 %	SE 3 OF

DI DOS NOI	BAST NO.	VALUE 5	SPECIFICATIONS/FOILIVALENT	I MED I	LINDING	100.20	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	I MES
R26 S	PART NO 57,47,4482	1,8 k	SPECIFICATIONS/EQUIVALENT	MFR	IND PO	86	57,44,64 0 6	40 M	SPECIFICATIONS/EGUIVALENT	MFR
	57.44.4424	120	276			87	57.11.61.06	10 M		
	7.11.6106	40 M				88	57.44.4223	22 k		
	57,44.4222	2,2k	5%			89	57.44.4473	47 k		
	8.44.8502	5 k	10% Trim-Potm.			90	57.44.4473	47 k		
	57,44,442.2	4.2 k	5%			91	57,44.3392	3,9 k	1%	
	57.41,4822	8,2k	5%			92	57.44.32.42	2,4 k	1%	
	57.44.4223	22k	270	_		93	57.44.37.52	7,5k	1%	
	57.44,64.06	40 M		-		94	57,44,3472	47 k	A%	_
	57.44.64.06	40M				95	57.44.4569	5,6	2%	_
		47 k		-		96	57.11.4682	6,8 k	2%	_
	57.44.4473	47 k		-		97	57,44.4682	6.8 k	2%	_
	57.44.4473								2/8	-
	57.47.4223	22 k		_		98	57,41.4682	6,8 k		_
	7.44,3392	3,9 k	1%			99	57.44.4124	12.0		
	57,11,3242	2,4 k	4%			100	57.44.124	420		_
	57.44.37.52	7,5k	4%			101	57.44.442.4	/20		
	57.11.3472	4/7k	1/3	-		102	57.44.45.62	5,6 k	2%	
	57,11.45 69	5,6	2%			103	57.44.32.02	2,0k	4%	
	57,11,4682	6,8k	2%			104	57.44.4224	220		_
	57.41.4682	6,8k	2%			105	57.44.422.4	220		
	57,11.4682	6,8k				106	57.44.422.4	220		
R47 5	57.44.4124	120			R/	407	57,11.4221	220		
	57.11.4121	120			\perp					
R49 5	53.44,4424	120								
	57.44.4562	5,6k	2%			410	57.44.4822	8,2k	2%	
R54 5	57.44.32.02	2,0k	1%		☐ R	344	57.44.44.02	1k	2%	
	57.44.422.4	220				112	1912,001.23	400 k	Potm. lin. (Volume)	
	57.41.422.4	220			R/	113	57,44,4223	22 k		
	57.44.422.4	220				444	57.44.422.3	22k		
	57.41.4224	220				445	57,44,4823	82k	5%	
D DATE	NAME				INDI	DATI		I		
)	17000				(1)					
				1	<u> </u>			i		
ál					0					
011-01-0	10 444				181)H= 01	- 90 4///			
04-04-8			- neul-, Lunia non 1		00)4- O/			- 0611 - 1 1010 1100	
		TOR UNI	T 2CH PL 1.912.420 PAG	ge 5 of 9	00)4-0/ UD(TOR UNIT	2CH PL 1.912.420 PAG	1 7 of 9
04-04-8		TOR UNI	T 2CH PL 1.912.420 PAR	GE 5 OF 9	00			TOR UNIT	2CH PL 1.912.420 PAG	: 7 of 9
04-04-8 STUDER	CR. MONI		T 2CH PL 1.912.420 PAGE SPECIFICATIONS/IQUIVALENT	GE 5 OF 9	00	'VD	C.R.MONI	TOR UNIT	2CH PL 1.912.420 PAG	1 7 OF 9
04-04-8		TOR UNI			ST	OS NO	C.R. MONI			
04-04-8 STUDER	CR. MONI				ST	OS NO	C.R.MONI	VALUE	SPECIFICATIONS/EQUIVALENT	
04-04-8 STUDEF	C.R. MONI	VALUE	SPECIFICATIONS/EQUIVALENT		ST ST INDIPO	OS NO 24/17	PART NO 57,44,4483 57,44,4483	18 k 18 k	SPECIFICATIONS/EQUIVALENT	
DIPOS NO	PART NO. 57.44.4682	VALUE 6,8k	SPECIFICATIONS/EQUIVALENT		ST ST R R	OS NO 2446 2447 2448	PART NO 57,44,4483 57,44,4483 57,44,4483	48 k 48 k 48 k 82 k	SPECIFICATIONS/EQUIVALENT 5% 5% 5%	
04-04-8 STUDEF DIPOS NOI R58	PART NO 57.44.4682 57.44.4682	6,8k 6,8k	SPECIFICATIONS/EQUIVALENT		IND PC	OS NO 24/6 24/7 4/8 24/9 24	PART NO 57,44,4483 57,44,4483 57,44,4483 4,942,00423	78 k 78 k 78 k 82 k 700 k	SPECIFICATIONS/EQUIVALENT 5% 5% 5% Potm. Lin. (Balance)	
04-04-8 STUDEF DIPOS NOI R58 R59 R60	PART NO 57.44.4682 57.44.4682 57.44.4682	6,8k 6,8k 6,8k	SPECIFICATIONS/EQUIVALENT		ST ST R R R	0S NO 2446 2447 448 449	PART NO 57,44,4483 57,44,4483 57,44,4483 57,44,4823 4,942,00423 57,44,3543	78 k 78 k 78 k 82 k 700 k	SPECIFICATIONS/EQUIVALENT 5% 5% 5% Potm. Lin. (Balance) 4%	
0 04-04-8 STUDEF DI POS NO R58 R59 R60 R64	PART NO 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682	6,8k 6,8k 6,8k 6,8k	SPECIFICATIONS/EQUIVALENT		INDIPORT	0S NO 2446 2447 448 449 420	PARTNO 57,44,4483 57,44,4483 57,44,4483 57,44,4483 57,44,4823 4,912,004,23 57,44,3543 57,44,3543	48 k 48 k 48 k 82 k 400 k 54 k	SPECIFICATIONS/EQUIVALENT 5% 5% 5% Potm. Lin. (Balance)	
04-04-8 5TUDEF D POS NO R58 R59 R60 R64	PART NO 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682	6,8k 6,8k 6,8k 6,8k	SPECIFICATIONS/EQUIVALENT		INDIPO	0S NO 2446 2447 448 449 420 424	PART NO 57,44,4483 57,44,4483 57,44,4483 57,44,4823 4,942,00423 57,44,3543 57,44,3543 57,44,4334	VALUE 49 k 48 k 82 k 400 k 54 k 330 k	SPECIFICATIONS/EQUIVALENT 5% 5% 5% Potm. Lin. (Balance) 4%	
04-04-8 5TUDEF D FOS NO R58 R59 R60 R64 R62	PART NO 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4223	6,8k 6,8k 6,8k 6,8k 22 k	SPECIFICATIONS/EQUIVALENT		INDIPO	08 NO 2446 2447 448 449 420 424 422 423	PARTNO 57,44,4483 57,44,4483 57,44,4483 57,44,44823 4,942,00423 57,44,3543 57,44,3543 57,44,4334 57,44,4334	78 k 78 k 82 k 700 k 57 k 330 k 390	SPECIFICATIONS/EQUIVALENT 5% 5% 5% Potm. Lin. (Balance) 4%	
D POS NO R58 R59 R60 R62 R64	PART NO 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4223 57.44.4223 57.44.4223	6,8k 6,8k 6,8k 6,8k 22 k 22 k	SPECIFICATIONS/EQUIVALENT		IND PC	0S NO 2446 447 448 420 424 422 422 422 422 422 422 424	PART NO. 57,44,4483 57,44,4483 57,44,4483 57,44,423 57,44,3543 57,44,3543 57,44,434 57,44,434 57,44,434	VALUE 48 k 48 k 82 k 400 k 54 k 54 k 330 k 390 47 k	SPECIFICATIONS/EQUIVALENT 5% 5% 5% Potm. Lin. (Balance) 4%	
04-04-8 STUDIEF POS NOI R58 R59 R60 R64 R62 R64 R64 R65	PART NO 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4223 57.44.4223 57.44.4223 57.44.4223 57.44.4223	6,8k 6,8k 6,8k 6,8k 22 k 22 k 5 k	SPECIFICATIONS/EQUIVALENT		INDIPO	0S NO 2446 2447 448 449 424 422 422 422 423 424 2425	PART NO 57,44,4483 57,44,4483 57,44,4483 57,44,4823 4,942,00423 57,44,9543 57,44,9543 57,44,434 57,44,434 57,44,434 57,44,434 57,44,434	VALUE 49 k 48 k 82 k 400 k 54 k 330 k 390 47 k 82 k	SPECIFICATIONS/EQUIVALENT 5% 5% 5% Potm. Lin. (Balance) 4%	
D POS NO. R58 R59 R60 R64 R62 R63 R64 R64 R64 R65 R64 R65 R64	PART NO 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.423 57.44.4223 57.44.4223	6,8k 6,8k 6,8k 6,8k 22 k 22 k 5 k 4,2 k	SPECIFICATIONS/ROUNALENT 2 x 2 x 2 x 2 x 2 x 2 x 2 x 2 x 2 x 2		IND PC	08 NO 2446 2447 448 420 424 422 423 424 424 425 425 426	PARTNO 57,44,4483 57,44,4483 57,44,4483 57,44,4823 57,44,3543 57,44,3543 57,44,3543 57,44,473,4473,4472 57,44,472 57,44,472 57,44,472 57,44,472 57,44,472	VALUE 49 k 48 k 82 k 400 k 54 k 330 k 330 k 390 47 k 82 k 47 k	SPECIFICATIONS/EQUIVALENT 5% 5% 5% Potm. Lin. (Balance) 4%	
04-04-95 04-04-95 04-04-95 07-04-95 07-04-96 07-04-	PART NO 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4223 58.04.8502 57.44.4422 57.44.4223 57.44.4223 57.44.4223	6,8k 6,8k 6,8k 6,8k 22k 22k 5k 4,2k 22k	### ##################################		IND PC	05 NO 2446 2447 448 449 420 424 422 423 424 425 426 427	PARTNO 57,44,4483 57,44,4483 57,44,4483 4942,00423 57,44,9843 57,44,9843 57,44,984 57,44,4934 57,44,44,44,44,44,44,44,44,44,44,44,44,44	VALUE 48 k 48 k 82 k 400 k 54 k 330 k 390 47 k 82 k 47 k 390	SPECIFICATIONS/EQUIVALENT 5% 5% 5% Potm. Lin. (Balance) 4%	
04-04-95 04-04-95 04-04-95 04-04-95 04-04-95 04-04-95 04-04-95 04-04-95 04-04-95 04-04-95 04-04-95 04-04-95 04-04-95 04-04-95 04-04-95 04-04-95 04-04-96 04-04-	PART NO 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.423 57.44.4223 57.44.4223	6,8k 6,8k 6,8k 6,8k 22 k 22 k 5 k 4,2 k	### ##################################		NO PC R R R R R R R R R	CAME CAME	PARTNO 57,44,4483 57,44,4483 57,44,4483 57,44,4823 57,44,823 57,44,823 57,44,834 57,44,473 57,44,473 57,44,473 57,44,473 57,44,473 57,44,4334 57,44,4334 57,44,4334 57,44,4334	18 k 18 k 82 k 100 k 54 k 330 k 390 47 k 82 k 47 k 330 s	SPECIFICATIONS/EQUIVALENT 5% 5% 5% Potm. Lin. (Balance) 4%	
04-04-8 TUDEF POS NO R58 R59 R59 R60 R64 R62 R63 R64 R65 R64 R65 R64 R65 R64 R65 R66 R66	PART NO 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4223 58.04.8502 57.44.4422 57.44.4223 57.44.4223 57.44.4223	6,8k 6,8k 6,8k 6,8k 22 k 22 k 5k 4,2k 22k 4,5k 22,2k 22,2k 22,2k 22,2k	### ##################################		NO PC	COS NO. CA16 CA17 CA16 CA17 CA16 CA17 CA16 CA17	PARTNO 57.44.44.83 57.44.44.83 57.44.44.83 57.44.44.83 57.44.49.83 57.44.356.43 57.44.356.43 57.44.93.44 57.44.49.34 57.44.49.34 57.44.49.34 57.44.49.34 57.44.49.34 57.44.49.34 57.44.49.34	VALUE 18 k 18 k 18 k 82 k 100 k 54 k 330 k 330 k 47 k 82 k 47 k 390 330 k 41 M	SPECIFICATIONS/EQUIVALENT 5% 5% 5% Potm. Lin. (Balance) 4%	
04-04-8 STUDEF POS NO R58 R59 R59 R60 R64 R62 R63 R65 R65 R66 R66 R66 R66 R66 R66 R66 R66	PART NO 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4223 58.04.8502 57.44.4223 57.44.4223 57.44.4223 57.44.4223 57.44.4223	6,8k 6,8k 6,8k 6,8k 22k 22k 5k 4,2k 22k 4,5k	### ##################################		NO PC	CAME CAME	PARTNO 57,44,4483 57,44,4483 57,44,4483 57,44,4823 57,44,823 57,44,823 57,44,834 57,44,473 57,44,473 57,44,473 57,44,473 57,44,473 57,44,4334 57,44,4334 57,44,4334 57,44,4334	18 k 18 k 82 k 100 k 54 k 330 k 390 47 k 82 k 47 k 330 s	SPECIFICATIONS/EQUIVALENT 5% 5% 5% Potm. Lin. (Balance) 4%	
R58 R59 R60 R65 R65 R65 R65 R65 R65 R65 R65 R65 R65	PART NO 57.44.4682 57.44.4682 57.44.4682 57.44.4682 57.44.4223 57.44.4223 57.44.4223 57.44.4223 57.44.4223 57.44.4222 57.44.4222 57.44.4222	6,8k 6,8k 6,8k 6,8k 22 k 22 k 5k 4,2k 22k 4,5k 22,2k 22,2k 22,2k 22,2k	### ##################################		IND PC R R R R R R R R R	COS NO. CA16 CA17 CA16 CA17 CA16 CA17 CA16 CA17	PARTNO 53.44.44.83 53.44.44.83 53.44.48.23 4.84.2.04.23 4.84.2.04.23 53.44.82.3 53.44.82	VALUE 18 k 18 k 18 k 82 k 100 k 54 k 330 k 330 k 47 k 82 k 47 k 390 330 k 41 M	SPECIFICATIONS/EQUIVALENT 5% 5% 5% Potm. Lin. (Balance) 4%	
R58 R59 R64 R65 R64 R65 R64 R65 R67 R68 R69 R74	57.44.4622 57.44.4622 57.44.4625 57.44.4625 57.44.4625 57.44.4623 57.44.4623 57.44.4623 57.44.4623 57.44.4623 57.44.4625 57.44.4623 57.44.4623 57.44.4623	6,8 k 6,8 k 6,8 k 6,8 k 6,8 k 22 k 22 k 5 k 4,2 k 2,2 k 4,5 k 2,2 k 4,5 k 2,2 k 4,0 k 4,0 k 4,0 k	### ##################################		IND PC	COS NO. 2446 2447 2448 2449 24424 24425 2426 2427 2423	PARTNO 51.44.44.83 57.44.44.83 57.44.44.83 57.44.44.83 57.44.483 57.44.98.3 57.44.93.4 57.44.93.4 57.44.93.4 57.44.93.4 57.44.93.4 57.44.93.4 57.44.93.4 57.44.93.4 57.44.93.4 57.44.93.4 57.44.93.4 57.44.93.4	VALUE 49 k 48 k 82 k 400 k 54 k 330 k 330 k 347 k 47 k 390 330 k 47 k 47 k 47 k 47 k 400 k	SPECIFICATIONS/EQUIVALENT 5% 5% 5% Potm. Lin. (Balance) 4%	
04-04-8 TUDEF D POS NO R58 R59 R60 R64 R62 R63 R64 R65 R65 R65 R65 R65 R65 R65	73.44462 57.44462 57.44462 57.44682 57.44682 57.44682 57.44823 57.44823 57.44823 57.44823 57.44823 57.44823 57.44823 57.44823 57.44823 57.44823 57.44823 57.4483 57.4483 57.4483 57.4483 57.4483 57.4483 57.4483 57.4483 57.4483	6,8 k 6,8 k 6,8 k 6,8 k 6,8 k 72 k 72 k 72 k 72 k 72 k 72 k 72 k 74 k 75 k 76 k 76 k 76 k 77 k 78 k 78 k 78 k 78 k 78 k 78 k 78	### ##################################		IND PC R R R R R R R R R	CUDO COS NO C 446 2446 4447 448 449 4420 4421 4422 4423 4424 4425 8427 8427 8428 8429 8429 8430	PARTNO 53.44.44.63 57.44.44.63 57.44.44.63 57.44.44.63 57.44.46.23 4.84.2.00.423 57.44.85.43 57.44.83.45 57.44.83.45 57.44.83.45 57.44.83.45 57.44.83.45 57.44.83.45 57.44.83.45 57.44.83.45 57.44.83.45 57.44.83.45 57.44.83.45 57.44.83.45 57.44.84.66	VALUE 48 k 48 k 82 k 400 k 54 k 54 k 330 k 330 k 47 k 82 k 47 k 330 c 44 M 47 k 47 k 47 k 47 k 47 k 47 k 48 c 48 c 48 c 48 c 48 c 48 c 48 c 48 c	SPECIFICATIONS/EQUIVALENT 5% 5% 5% Potm. Lin. (Balance) 4%	
04-04-9 BTUDEF R58 R58 R59 R60 R62 R62 R63 R64 R64 R65 R64 R65 R64 R65 R64 R65 R64 R65 R64 R65 R64 R65 R64 R65 R65 R64 R64 R65 R65 R65 R65 R65 R65 R65 R65	57.44.462 57.44.462	6,8 k 6,8 k 6,8 k 6,8 k 6,8 k 22 k 22 k 4,2 k 4,5 k 2,2 k 4,5 k 4,0 k 4,7 k 4,0 k 4,7 k 4,7 k 4,7 k 4,7 k 4,7 k 4,7 k	### ##################################		IND PC	CUDO OS NO RAMA	PARTNO 57.44.4483 574.44483 574.4483 574.4483 574.4483 574.4483 574.4354 574.4334 574.4334 574.4334 574.4334 574.4334 574.4403	VALUE 48 k 48 k 62 k 400 k 54 k 330 k 330 k 47 k 82 k 4,7 k 330 k 41 M 400 k 68 k	SPECIFICATIONS/EQUIVALENT 5% 5% 5% Potm. Lin. (Balance) 4%	
R58	57.44.46.82 57.44.46.82 57.44.46.82 57.44.46.82 57.44.46.82 57.44.46.82 57.44.46.82 57.44.46.82 57.44.46.82 57.44.46.82 57.44.46.82 57.44.46.82 57.44.46.83	b,8k b,8k b,8k b,8k c,2k 22k 22k 22k 4,2k 2,2k 4,5k 4,0k 2,2k 4,0k	### DECIFICATIONSTOUVALENT 23		NO O O O O O O O O O	CUDO OS NO RAM6 RAM7 A448 A448 A448 A420 A424	PARTNO 57.44.4483 57.44.4483 574.4 983 574.4 983 574.4 983 574.4 983 574.4 984 574.4 984 574.4 984 574.4 984 574.4 984 574.4 984 574.4 984 574.4 984 574.4 985	## VALUE ### ### ### ### ### #### #### ########	SPECIFICATIONS/EQUIVALENT 5% 5% 5% Potm. Lin. (Balance) 4%	
R58	57.44.46.82 57.44.46.82 57.44.46.82 57.44.46.82 57.44.46.82 57.44.46.82 57.44.46.82 57.44.46.82 57.44.46.82 57.44.46.82 57.44.46.82 57.44.46.82 57.44.46.82 57.44.46.82 57.44.46.82 57.44.46.82 57.44.46.82 57.44.46.82 57.44.46.82 57.44.46.83 57.44.46.84	6,8k 6,8k 6,8k 6,8k 6,8k 22k 5k 4,2k 4,2k 4,5k 2,2k 40 k 40 k 2,2k 47 k 680k	### ##################################		NO O O O O O O O O O	COS NO CAME	PARTNO 57.44.4483 57.44.4483 57.44.483 57.44.483 57.44.3543 57.44.3543 57.44.3543 57.44.3543 57.44.3543 57.44.4334 57.44.4924 57.44.4924 57.44.4934 57.44.4934 57.44.4934 57.44.4934 57.44.4935 57.44.4934 57.44.4934 57.44.4934 57.44.4934 57.44.4934 57.44.4934 57.44.4934 57.44.4934 57.44.4934 57.44.4934 57.44.4934 57.44.4934 57.44.4934 57.44.4934 57.44.4934	VALUE 48 k 48 k 82 k 400 k 54 k 54 k 54 k 330 k 330 k 47 k 82 k 47 k 390 330 k 41 k 45 k 45 k 46 8 66 k 45 k 40 k	SPECIFICATIONS/EQUIVALENT 5% 5% 5% Potm. Lin. (Balance) 4%	
R58 R59 R60 R64 R65 R64 R67 R67 R772 R73 R74 R75 R75 R75 R75 R75	77.44.46.2 57.44.46.2 57.44.46.2 57.44.46.2 57.44.46.2 57.44.46.2 57.44.46.2 57.44.46.2 57.44.46.2 57.44.46.2 57.44.46.2 57.44.46.2 57.44.46.2 57.44.46.2 57.44.46.2 57.44.46.2 57.44.46.2 57.44.46.2 57.44.46.3	6,8 k 6,8 k 6,8 k 6,8 k 6,8 k 6,8 k 22 k 22 k 4,2 k 2,2 k 4,5 k 2,2 k 4,0 k 4,7 k 6,0 k 4,7 k 6,0 k 3,9 k 2,2 k	### DECIFICATIONSTOUVALENT 23		MO POP P	000 NO 2446 2447 2448 2449 2424 2425 2425 2425 2426 2427 2428 2426 2427 2428 2426 2427 2428 2426 2427 2428	PARTNO 57.44.4483 57.44.4483 574.4 483 574.4 483 574.4 483 574.4 584 574.4 584 574.4 584 574.4 584 574.4 584 574.4 493 574.4 493 574.4 493 574.4 493 574.4 494 574.4 494 574.4 494 574.4 494 574.4 495 574.4 495 574.4 496 574.4 496 574.4 496 574.4 496 574.4 496 574.4 496 574.4 496 574.4 496 574.4 496 574.4 496 574.4 496 574.4 496 574.4 496 574.4 496 574.4 496 574.4 496	VALUE 48 k 48 k 82 k 400 k 54 k 54 k 330 k 330 k 47 k 390 47 k 390 47 k 40 k 40 k 45 k 40 k 40 k 40 k 40 k 40 k 45 k 45 k 40 k 45 k 45 k	SPECIFICATIONS/EQUIVALENT 5% 5% 5% Potm. Lin. (Balance) 4%	
R58	PAT NO PAT NO	6,8k 6,8k 6,8k 6,8k 6,8k 22k 22k 4,2k 4,2k 4,2k 4,5k 2,2k 4,7k 680k 680k 680k 680k 680k 640k 40 k	### DECIFICATIONSTRUMALENT 2.3		ST P P P	000 NO 2446 2447 2448 2449 2420	PARTNO 57,44,4483 574,44483 574,4483 574,4863 574,48543	VALUE 48 k 48 k 82 k 400 k 54 k 54 k 330 k 320 k 47 k 330 c 47 k 330 c 47 k 36 k 40 k 40 k 45 k 45 k 45 k 45 k 45 k 45 k 45 k 45	SPECIFICATIONS/EQUIVALENT 5% 5% 5% Potm. Lin. (Balance) 4%	
R58 R59 R60 R62 R64 R64 R65 R65 R65 R65 R65 R65 R65 R65 R65 R66 R67 R67 R77 R79 R79 R79 R79 R79 R79 R79 R79 R7	R (CR. MON1 MAT NO 57.44.4622 55.44.462 55.44.462 57.44.462 57.44.462 57.44.462 57.44.462 57.44.462 57.44.462 57.44.462 57.44.462 57.44.462 57.44.462 57.44.462 57.44.463 57.44.463 57.44.463 57.44.463 57.44.463 57.44.463 57.44.463 57.44.463 57.44.463 57.44.463	6,8k 6,8k 6,8k 6,8k 6,8k 22 k 22 k 4,2 k 2,2k 4,5k 4,5k 4,6 k 4,0 k 4,7 k 680k 3,9k 2,2 k 4,7 k 680k 3,6 k 4,8 k 4,8 k	### DECIFICATIONSTOUVALENT 23		NO PC PC PC PC PC PC PC P	CONTROL OF THE PROPERTY OF THE	PARTNO 57.44.4483 57.44.4483 574.4483 574.4483 574.4983 574.4984	VALUE 48 k 48 k 82 k 400 k 54 k 54 k 54 k 330 k 330 k 47 k 82 k 47 k 330 k 4 M 00 k 68 h 68 k 45 k 45 k 400 k 2,2 k 6,8 k 2,2 k 40 k	SPECIFICATIONS/EQUIVALENT 5% 5% 5% Potm. Lin. (Balance) 4%	
R58 R59 R60 R64 R64 R65 R65 R67 R77 R77 R78 R76 R77 R78 R76 R77 R78 R76 R76 R76 R76 R77 R77 R77 R77 R77 R77	PMT NO PMT NO 57.44.4962 57.44.4962 57.44.492	5,8k 6,8k 6,8k 6,8k 6,8k 22 k 22 k 4,2 k 2,2k 4,5 k 2,2k 4,7 k 680 k 680 k 680 k 680 k 48 k 48 k 48 k 48 k 48 k	### DECIFICATIONSTRUMALENT 2.3		IND PR R R R R R R R R R	CUIDO COS NO R 446 R 447 448 449 4424 4425 4426 4426 4426 4426 4426 4427 4427 4428 4428 4428 4429 4	PARTNO 57,44,4483 574,44483 5574,4483 5574,4483 574,4384 574,4384 574,4384 574,4384 574,4384 574,4384 574,4384 574,4483 574,4483 574,4464 574,4464 574,4463 574,4463 574,4463 574,4463 574,4463 574,4463 574,4463 574,4463 574,4463 574,4463 574,4463 574,4463	VALUE 18 k 18 k 82 k 100 k 51 k 390 k 390 47 k 82 k 42 k 42 k 43 h 40 0 k 68 k 15 k 40 0 k 68 k 40 0 k 68 k 40 0 k 68 k 41 k 40 0 k	SPECIFICATIONS/EQUIVALENT 5% 5% 5% Potm. Lin. (Balance) 4%	
R58 R59 R60 R64 R65 R64 R65 R67 R66 R77 R76 R77 R78 R79 R79 R79 R79 R79 R79 R79 R79 R79 R79	PMT NO PMT NO PMT NO 57 4.4 4622 55.14.4 462 57.44.4 62	6,8k 6,8k 6,8k 6,8k 22 k 22 k 4,2 k 4,5k 4,5k 4,5k 4,5k 4,0 k 40 k 2,2k 40 k 40 k 3,9k 22 k 4,8k 4,8k 4,9k 4,9k 4,9k 4,9k 4,9k 4,9k 4,9k 4,9	### DECIFICATIONSTOUVALENT 23		IND R R R R R R R R R	CUIDO COS NO CA16 CA17 CA16 CA17 CA16 CA17 CA16 CA17 CA16 CA17 CA16 CA17 CA16 CA17 CA16 CA17 CA16 CA17 CA16 CA17 CA16 CA17 C	PARTNO 57.44.4483 57.44.4483 57.44.4483 57.44.483 57.44.483 57.44.294 57.44.294 57.44.294 57.44.294 57.44.494 57.44.494 57.44.494 57.44.494 57.44.494 57.44.495	VALUE 48 k 48 k 62 k 400 k 54 k 320 k 320 k 320 k 47 k 320 k 330 k 47 k 320 k 47 k 320 k 47 k 320 k 47 k 320 k 47 k 320 k 48 k 45 k 45 k 45 k 40 0 k 2/2 k 6/8 k 47 0 k 47 0 47 0	SPECIFICATIONS/EQUIVALENT 5% 5% 5% Potm. Lin. (Balance) 4%	
R58 R58 R59 R60 R64 R65 R65 R65 R65 R65 R65 R67 R67 R77 R77 R77 R76 R79 R79 R79 R79 R79 R79 R79 R79 R79 R79	PAT NO PA	5,8 k 6,8 k 6,8 k 6,8 k 6,8 k 6,8 k 7,2 k 7,5 k	### DECIFICATIONSTOUVALENT 2		No per N	CUIDO S NO R 446 R 447 448 448 449 4424 8422 8422 8423 8424 8426 8427 8428 8427 8428 8428 8429 8430 8434 8434 8434 8434 8434 8434 8434 8434 8434 8434	PARTNO 57.44.4483 57.44.4483 57.44.4483 57.44.483 57.44.493 57.44.934	VALUE 18 k 48 k 82 k 100 k 51 k 300 k 330 k 330 k 47 k 47 k 47 k 40 k 68 k 45 k 400 k 2/2 k 40 k 47 0 47 0 47 0 47 0 47 0 47 0 47 0 47 0	SPECIFICATIONS/EQUIVALENT 5% 5% 5% Potm. Lin. (Balance) 4%	
R58 R59 R60 R64 R65 R65 R65 R65 R67 R66 R74 R75 R76 R77 R78 R77 R78 R79 R80 R84 R80 R84 R80 R84 R80 R84 R85 R87 R74 R75 R76 R76 R77 R78 R79 R79 R80 R84 R80 R84 R80 R84 R80 R84 R80 R84	PMT NO PMT NO PMT NO 57.44 #622 55.44 #62 55.44 #62 55.44 #62 55.44 #62 55.44 #62 55.44 #62 55.44 #62 55.44 #62 55.44 #62 55.44 #62 55.44 #62 55.44 #62 55.44 #62 55.44 #62 55.44 #62 55.44 #62 55.44 #62 55.44 #62 55.44 #63	6,8k 6,8k 6,8k 6,8k 6,8k 22k 22k 4,2k 4,2k 4,5k 2,2k 4,0 k 4,0 k 2,2k 4,7 k 620k 3,9k 4,8 k 4,8 k 4,2 k 4,5 k 2,2 k 4,6 k 4,6 k 4,7 k 620k 3,8 k 4,8 k	23 23 24 23 24 23 24 24 24 25 25 25 25 25 25 25 25 25 25 25 25 25		Not per Not per	CUIDO OS NO CAMB CA	PARTNO 57.44.4483 57.44.4483 574.4 483 574.4 483 574.4 483 574.4 584 574.4 5	VALUE 48 k 48 k 82 k 400 k 51 k 330 k 330 k 330 k 330 k 330 k 47 k 330 k 47 k 47 k 48 k 48 k 45 k 40 k 45 k 40 k 45 k 40 k 45 k 40 k 40 k 40 k 40 k 40 k 40 k 40 k 40	SPECIFICATIONS/EQUIVALENT 5% 5% 5% Potm. Lin. (Balance) 4%	
D POS NO R58 R59 R60 R64 R65 R66 R66 R66 R66 R67 R67 R67 R74 R75 R74 R75 R74 R75 R74 R75 R74 R75 R74 R75 R74 R75 R76 R77 R76 R	PAT NO PAT NO	5,8k 6,8k 6,8k 6,8k 6,8k 6,8k 6,8k 7,2k 7,2k 7,5k 7,2k 7,5k 7,2k 7,0k 7,0k 7,0k 7,0k 7,0k 7,0k 7,0k 7,0	### DECINICATIONSTOUVALENT 2		No No No No No No No No	05 NO 2446 4447 448 449 4420 4424 4425 4425 4425 4425 4426 442	PARTNO 57.44.4483 57.44.4483 574.44483 574.4483 574.4384 574.4384 574.4384 574.4384 574.4384 574.4384 574.4384 574.4384 574.4384 574.44823 574.44823 574.44823 574.44823 574.44823 574.44823 574.44823 574.44823 574.44823 574.44823 574.44823 574.44823 574.44823 574.44823 574.44823 574.44823 574.44823 574.4483 574.4483 574.4483 574.4483 574.4483 574.4483 574.4483 574.4483 574.4483	VALUE 18 k 82 k 100 k 51 k 330 k 330 k 330 k 47 k 82 k 47 k 47 k 47 k 40 k 68 k 45 k 40 k 45 k 40 k 47 k 40 k 47 k 40 k 47 k 40 k 40 k 40 k 40 k 40 k 40 k 40 k 40	SPECIFICATIONS/EQUIVALENT 5% 5% 5% Potm. Lin. (Balance) 4%	
D POS NO R58 R59 R60 R64 R65 R66 R66 R66 R66 R67 R67 R67 R74 R75 R74 R75 R74 R75 R74 R75 R74 R75 R74 R75 R74 R75 R76 R77 R76 R	PMT NO PMT NO PMT NO 57.44 #622 55.44 #62 55.44 #62 55.44 #62 55.44 #62 55.44 #62 55.44 #62 55.44 #62 55.44 #62 55.44 #62 55.44 #62 55.44 #62 55.44 #62 55.44 #62 55.44 #62 55.44 #62 55.44 #62 55.44 #62 55.44 #62 55.44 #63	6,8k 6,8k 6,8k 6,8k 6,8k 22k 22k 4,2k 4,2k 4,5k 2,2k 4,0 k 4,0 k 2,2k 4,7 k 620k 3,9k 4,8 k 4,8 k 4,2 k 4,5 k 2,2 k 4,6 k 4,6 k 4,7 k 620k 3,8 k 4,8 k	23 23 24 23 24 23 24 24 24 25 25 25 25 25 25 25 25 25 25 25 25 25		No No No No No No No No	CUIDO OS NO CAMB CA	PARTNO 57.44.4483 57.44.4483 57.44.4483 57.44.483 57.44.483 57.44.493 57.44.994 57.44.994 57.44.994 57.44.994 57.44.493 57.44.493 57.44.493 57.44.493 57.44.493 57.44.493 57.44.493 57.44.493 57.44.493 57.44.493 57.44.493 57.44.493 57.44.493	VALUE 48 k 48 k 82 k 400 k 51 k 330 k 330 k 330 k 330 k 330 k 47 k 330 k 47 k 47 k 48 k 48 k 45 k 40 k 45 k 40 k 45 k 40 k 45 k 40 k 40 k 40 k 40 k 40 k 40 k 40 k 40	SPECIFICATIONS/EQUIVALENT 5% 5% 5% Potm. Lin. (Balance) 4%	
DIPON NO	PAT NO PAT NO	5,8k 6,8k 6,8k 6,8k 6,8k 6,8k 6,8k 7,2k 7,2k 7,5k 7,2k 7,5k 7,2k 7,0k 7,0k 7,0k 7,0k 7,0k 7,0k 7,0k 7,0	### DECINICATIONSTOUVALENT 2		No No No No No No No No	05 NO 2446 4447 448 449 4420 4424 4425 4425 4425 4425 4426 442	PARTNO 57.44.4483 57.44.4483 574.44483 574.4483 574.4384 574.4384 574.4384 574.4384 574.4384 574.4384 574.4384 574.4384 574.4384 574.44823 574.44823 574.44823 574.44823 574.44823 574.44823 574.44823 574.44823 574.44823 574.44823 574.44823 574.44823 574.44823 574.44823 574.44823 574.44823 574.44823 574.4483 574.4483 574.4483 574.4483 574.4483 574.4483 574.4483 574.4483 574.4483	VALUE 18 k 82 k 100 k 51 k 330 k 330 k 330 k 47 k 82 k 47 k 47 k 47 k 40 k 68 k 45 k 40 k 45 k 40 k 47 k 40 k 47 k 40 k 47 k 40 k 40 k 40 k 40 k 40 k 40 k 40 k 40	SPECIFICATIONS/EQUIVALENT 5% 5% 5% Potm. Lin. (Balance) 4%	
0 -000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	PAT NO NO NO NO NO NO NO NO NO NO NO NO NO	6,8k 6,8k 6,8k 6,8k 6,8k 6,8k 6,8k 22 k 22 k 22 k 4,2 k 2,2 k 4,2 k 4,2 k 4,0	### DECINICATIONSTOUVALENT 2		No No No No No No No No	CUIDO CS NO. 2446 2446 2446 2442 2420 2422 2423 2423 2423 2423 2423 2423 2423 2423 2423 2423 2423 2424 2422 2423 2423 2423 2424 2444 2444 2444 2444	PARTNO 57.44,4483 57.44,4483 57.44,4483 57.44,4983 57.44,2943 57.44,2943 57.44,2943 57.44,4934	78 k 48 k 82 k 400 k 54 k 320 k 320 k 320 k 320 k 320 k 320 k 320 k 47 k 47 k 47 k 47 k 47 k 47 k 47 k 4	SPECIFICATIONS/EQUIVALENT 5% 5% 5% Potm. Lin. (Balance) 4%	
0 -000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	77.44462 57.44462 57.44462 57.44462 57.44462 57.44462 57.44462 57.44423 57.44423 57.44423 57.44423 57.44423 57.44423 57.44423 57.44452 57.4452 57.4452	6,8k 6,8k 6,8k 6,8k 6,8k 6,8k 6,8k 22 k 22 k 22 k 4,2 k 2,2 k 4,2 k 4,2 k 4,0	### DECINICATIONSTOUVALENT 2		No No No No No No No No	CUIDO SS NO. 2446 4447 4478 448 4420 4424 4424 4422 4424 4425 4424 4423 4424 4423 4424 4423 4424 4423 4424 4423 4424 4424 4423 4424	PARTNO 57.44,4483 57.44,4483 57.44,4483 57.44,4983 57.44,2943 57.44,2943 57.44,2943 57.44,4934	78 k 48 k 82 k 400 k 54 k 320 k 320 k 320 k 320 k 320 k 320 k 320 k 47 k 47 k 47 k 47 k 47 k 47 k 47 k 4	SPECIFICATIONS/EQUIVALENT 5% 5% 5% Potm. Lin. (Balance) 4%	
□ 0 = 0 = 0 = 0 = 0 = 0 = 0 = 0 = 0 = 0	PAT NO NO NO NO NO NO NO NO NO NO NO NO NO	6,8k 6,8k 6,8k 6,8k 6,8k 6,8k 6,8k 22 k 22 k 22 k 4,2 k 2,2 k 4,2 k 4,2 k 4,0	### DECINICATIONSTOUVALENT 2		No. No.	CUIDO CS NO. 2446 2446 2446 2442 2420 2422 2423 2423 2423 2423 2423 2423 2423 2423 2423 2423 2423 2424 2422 2423 2423 2423 2424 2444 2444 2444 2444	PARTNO 57.44,4483 57.44,4483 57.44,4483 57.44,4983 57.44,2943 57.44,2943 57.44,2943 57.44,4934	78 k 48 k 82 k 400 k 54 k 320 k 320 k 320 k 320 k 320 k 320 k 320 k 47 k 47 k 47 k 47 k 47 k 47 k 47 k 4	SPECIFICATIONS/EQUIVALENT 5% 5% 5% Potm. Lin. (Balance) 4%	
R59 R69 R69 R69 R69 R69 R69 R69 R69 R69 R6	PAT NO NO NO NO NO NO NO NO NO NO NO NO NO	6,8k 6,8k 6,8k 6,8k 6,8k 6,8k 6,8k 22 k 22 k 22 k 4,2 k 2,2 k 4,2 k 4,2 k 4,0	### DECINICATIONSTOUVALENT 2		NO PC PC PC PC PC PC PC P	CUIDO CS NO. 2446 2446 2446 2442 2420 2422 2423 2423 2423 2423 2423 2423 2423 2423 2423 2423 2423 2424 2422 2423 2423 2423 2424 2444 2444 2444 2444	PARTNO 57.44,4483 57.44,4483 57.44,4483 57.44,4983 57.44,2943 57.44,2943 57.44,2943 57.44,4934	78 k 48 k 82 k 400 k 54 k 320 k 320 k 320 k 320 k 320 k 320 k 320 k 47 k 47 k 47 k 47 k 47 k 47 k 47 k 4	SPECIFICATIONS/EQUIVALENT 5% 5% 5% Potm. Lin. (Balance) 4%	
POR NO PO	PAT NO NO NO NO NO NO NO NO NO NO NO NO NO	6,8k 6,8k 6,8k 6,8k 6,8k 6,8k 6,8k 22 k 22 k 22 k 4,2 k 2,2 k 4,2 k 4,2 k 4,0	### DECINICATIONSTOUVALENT 2		MIN MIN	CUIDO CS NO. 2446 2446 2446 2442 2420 2422 2423 2423 2423 2423 2423 2423 2423 2423 2423 2423 2423 2424 2422 2423 2423 2423 2424 2444 2444 2444 2444	PARTNO 57.44,4483 57.44,4483 57.44,4483 57.44,4983 57.44,2943 57.44,2943 57.44,2943 57.44,4934	78 k 48 k 82 k 400 k 54 k 320 k 320 k 320 k 320 k 320 k 320 k 320 k 47 k 47 k 47 k 47 k 47 k 47 k 47 k 4	SPECIFICATIONS/EQUIVALENT 5% 5% 5% Potm. Lin. (Balance) 4%	
R58 R59	PAT NO PA	6,8k 6,8k 6,8k 6,8k 6,8k 6,8k 6,8k 22 k 22 k 22 k 4,2 k 2,2 k 4,2 k 4,2 k 4,0	### DECINICATIONSTOUVALENT 2		No. No.	© NO C	PARTNO 57,44,4483 574,44483 574,4483 574,4483 574,4384 574,4384 574,4384 574,4384 574,4384 574,4384 574,4384 574,4473 574,44680 574,44604	78 k 48 k 82 k 400 k 54 k 320 k 320 k 320 k 320 k 320 k 320 k 320 k 47 k 47 k 47 k 47 k 47 k 47 k 47 k 4	SPECIFICATIONS/EQUIVALENT 5% 5% 5% Potm. Lin. (Balance) 4%	
POS NO INC. 1 TO S NO	R	VALUE	23 23 24 23 24 24 25 25 26 27 26 27 27 27 27 27 27 27 27 27 27 27 27 27		No No No No No No No No	COS NO COS	PARTNO 57,44,4483 574,44483 574,4483 574,4483 574,4384 574,4384 574,4384 574,4384 574,4384 574,4384 574,4384 574,4473 574,44680 574,44604	74 k 1 4 k 1	SPECIFICATIONS/TOUVALENT 5% 5% 5% Potent Lim. (Batance) 4% 4%	

Control Room Monitor Unit 1.912.420

IND	POS NO		PART NO	VALUE	SPE	CIFICATIONS/EQUIVALENT	MFR
	R146	57.	11.4102	1 k			
	R147	57.	11.4563	56 k			
	R148	57,	11.4223	22k			
	R149	57.	11.4102	11:			
	R150	57.	11.4682	6,8k			
	R151	57.	11,4102	1k			
	R452	57.	11.4470	47			
	R453	57	11.4470	47			
	R154	57	99.0209	5,6	PTC		
	R455	57	99.0209	5,6	PTC	L Philips	
	R156	57	99.02.09	5,6	PTC	2322,662,94005	
	R157	57.	99.02.09	5,6	PTC		
					,		
Г							
	SA	55	15.0003	2u, Au			
	52	5,5	.15.0003	20, Au			
	53	55	.15.0003	20, Au			
	S4	55	15,0003	20, Au			
	55	55	15,0113	10			
Г	56	55	.45.0113	10			
	57	55	.45.0004	4 u, Au			
	58	55	15.0002	2U Ag			
	59-523	55	15,0008	15×2U, AU			
	T4,T2	4.02	2,352,00	47:4	Output	Trafo	Stude
	VCA1,2	1.01	0,440,50		Voltage	Controlled Ampl	Stude
	ΧВ	55	15.0101	W2*4,6D	Lamp	Holder .	
	ХIС	53	.03.0166	DIP 8p	IC-Soc	ket 8 pins	
IIND	I DAT	E	NAME	1			
(4)							
3							
10				7			
6				1			
ŏ	04-0	1-82	MY	7			





MASTER OUTPUT SELECTOR

Summen-Ausgangswähler

Dieser Ausgangswähler kann ein Summensignal auf vier Sammelschienen verteilen und bietet zusätzlich die Möglichkeit, auf vier Hilfswege einzuspeisen. Die Einheit kann bei Summen oder Gruppen eingesetzt werden. Da kanalweise getrennt geschaltet wird, sind alle Möglichkeiten der Kanalvertauschung, der Monobildung und der Verteilung auf mehrere Ausgangskanäle gegeben.

Das Summen- bzw. Gruppensignal wird hinter dem Masterfader abgegriffen und dem Ausgangswähler zugeführt. Ein Abgriff vor dem Regler speist die Anwahl zu den Hilfssummen.

Ausgangswahl bei Summen

In dieser Konfiguration kann jeder Summenkanal auf jeden der vier Summenausgänge einspeisen. Dazu werden die Sammelschienen OUTPUT BUS eingesetzt. Die Leitungsverstärker der Summeneinheiten greifen jeweils die Sammelschiene OUTPUT BUS gleicher Nummer ab und führen das Signal dem zugehörigen Summenausgang MAIN OUTPUT zu.

Die Ausgangswahl zu den Summenausgängen muss in jedem Fall betätigt werden, ansonsten liegt kein Summensignal an.

Ausgangswahl bei Gruppen

Bei Gruppeneinheiten wird der Ausgangswähler als Summenanwahl eingesetzt. Die Gruppeneinheiten greifen jeweils einen GROUP BUS ab und speisen ihn auf den Gruppenausgang. Nach dem Gruppenregler wird nun das Signal abgezweigt und über den Ausgangswähler den Summensammelschienen zugeführt. Es stehen also sowohl die einzelnen Gruppenausgänge als auch vier beliebige, daraus gebildete Summen zur Verfügung.

Falls nur die Gruppensignale gebraucht werden, muss keine Ausgangswahl vorgenommen werden.

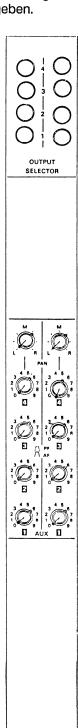
Hilfssummen AUX 1... 3

Die Modulation lässt sich über die mit dem Potentiometer gekoppelten Zug-/ Druckschalter vor (PF) oder nach (AF) dem Summenregler abgreifen. Aux 1... 3 sind Mono-Hilfswege.

AUX 4 Die Einspeisung auf den Stereo-Hilfsweg AUX 4 erfolgt über ein Panorama-Potentiometer.

Technische Daten	Frequenzgang 30Hz 16kHz Klirrabstand Fremdspannungsabstand (B = 23kHz Übersprechen	±0,5dB -70dB 100dB 90dB
Speisung	Speisespannung Leerlaufstrom	±15V 50mA
Mechanische Daten	Abmessungen Frontplatte Tiefe	520mm × 40mm 130mm

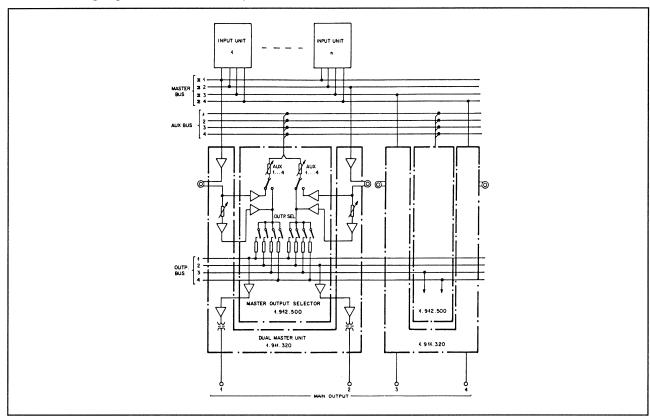
Gewicht



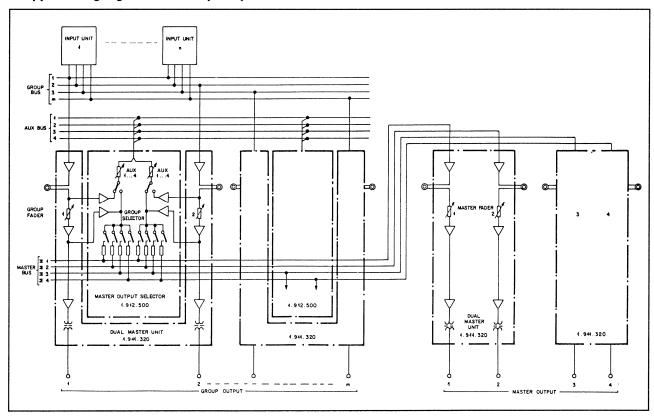
680g

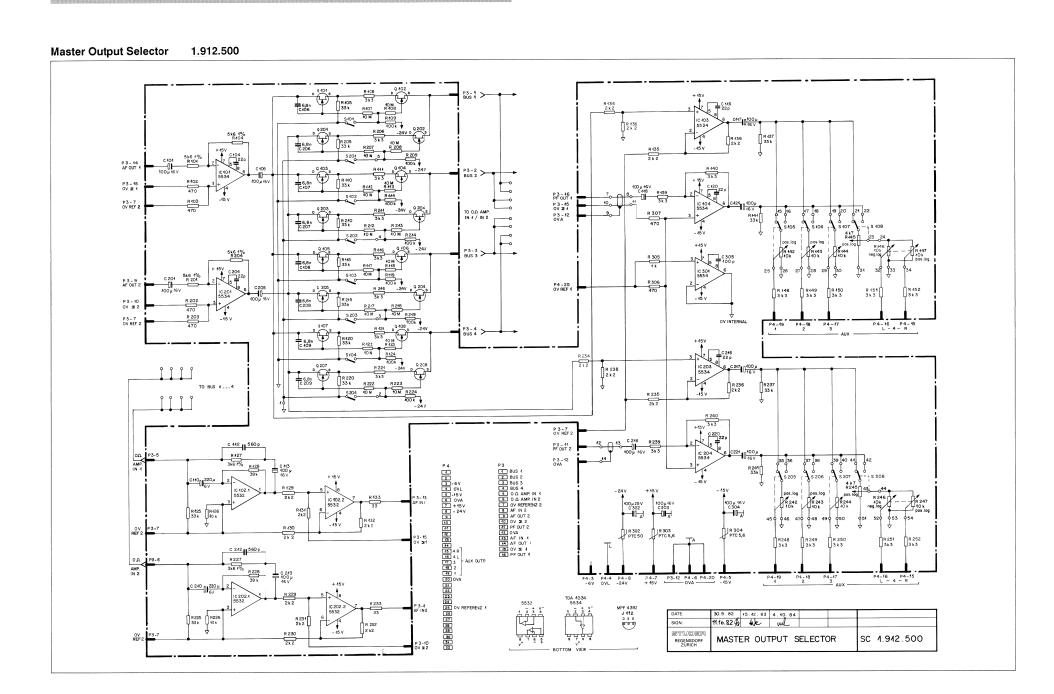
MASTER OUTPUT SELECTOR

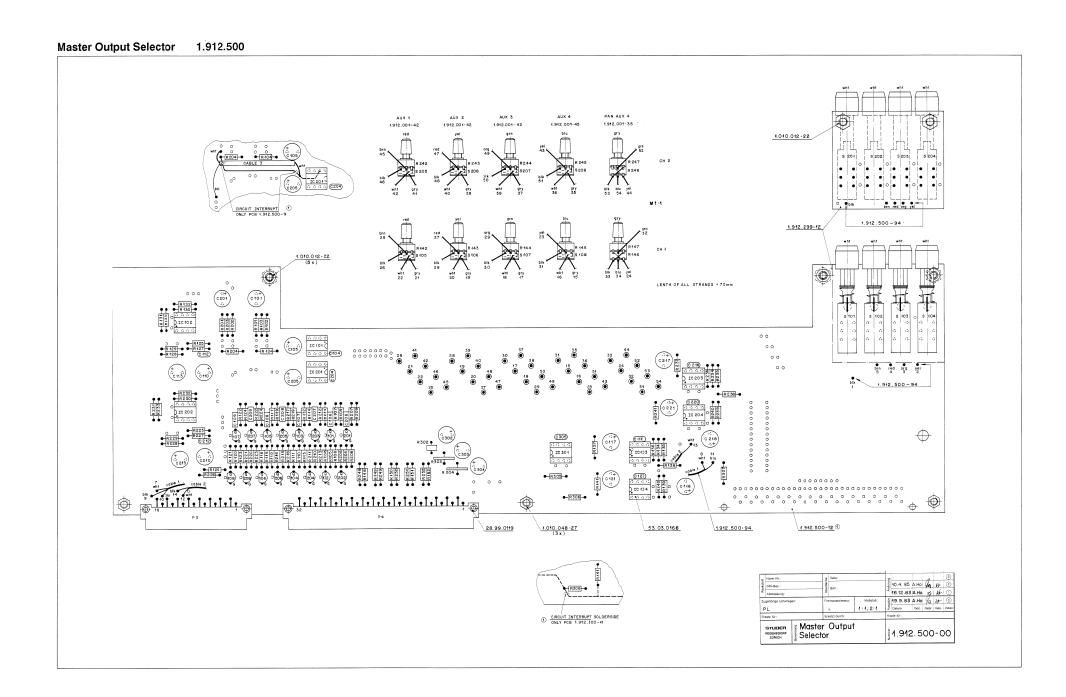
Summen-Ausgangswahl / Master Output Selection



Gruppen-Ausgangswahl / Group Output Selection





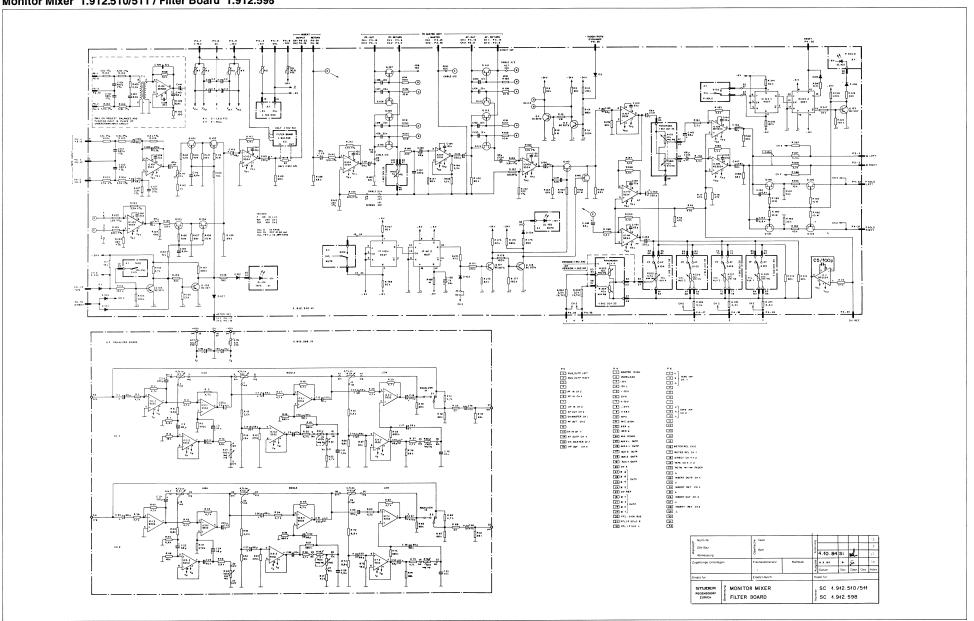


Master Output Selector 1.912.500

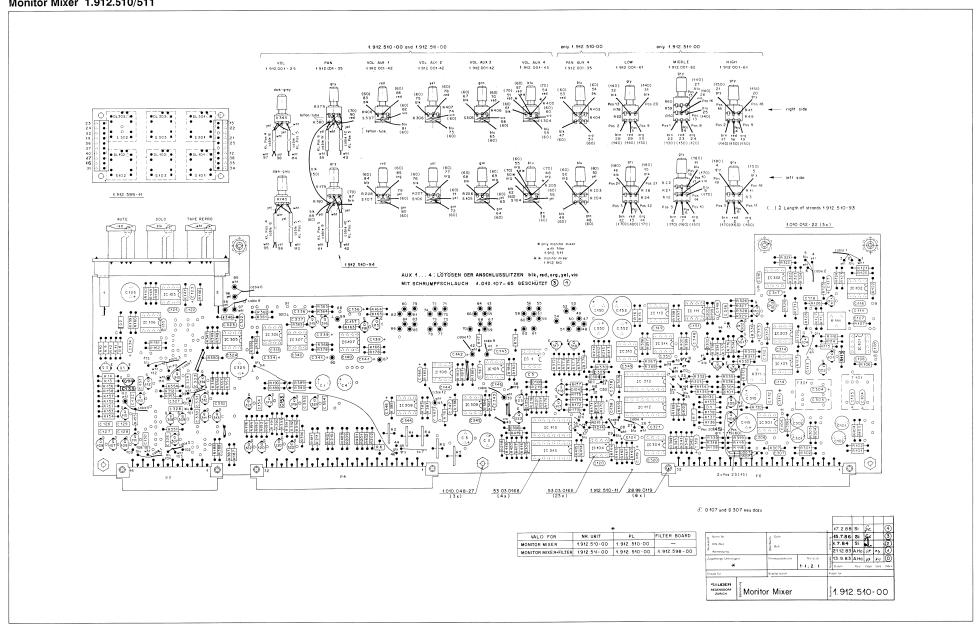
IND	POS NO	PART NO	VALUE	SPECIFICATIO	NS/EUUIVALIN I	MFR		POS NO	PART		VALUE	specifications/equivalent 46V EL	
L	\perp						Ļ	2 304	59.2	2.5101	100 U	CER	
Г							1	305	59.30	1.4101	100 p	CER	
	1/2												
	C.o1	59.22.5164	100 N	46 V	EL								
Т	0.0												
_													
⊢	all	59.34.2226	22 p		CER								
_	.04	DD 00 E/a/		46 V	EL								
_	.05	59.22.5/6/	100 14	45 V			Н	1/2					
	.06	53.06.0682	6,8 n	63 V	PE				F	- 0110	NC FEON	OP-AMP	
	.07	53.06.0682	6.8 n	63V 63V	PE		\sqcup	IC .01	20.0	3.0243	NE 5534		
Г	.08	59.06.0682	6.8 n	63V	PE			.02	50.05	1.0105	NE 5532	DUAL OP-AMP	
	.03	59.06.0682	6,8 n	63V	bĒ			.03	50.03	5.0243	NE 5534	OP-AMP	
	.10	59.22.2224	220 4	6V	EL			٠٥٤	50.03	5.0243	NE 5534	OP-AMP	
Н	1.10	OCT EL TELL											
⊢	.42	59.34.5564	560 p		CER								
⊢		E0 00 E4e4		46 V	El			IC301	50.05	0243	NE 5534	OP - AMP	
<u> </u>	.13	59.22.5101	100 JU	415 V	EL_		Н	10001	30.0.	5.0210	555 (9 7810	
L							Н						
L	1 1						Н						
Г	.16	59.34.2220	22 p		CER		Ш						
Г	. 17	53.22.5404	100 ,0	46 V	EL			Р 3	54.4	.2007 1.0359	2 * 8	1/2 EURO B-TYPE	
Г	. 18	59.22.5104	/100 AI	-16 V	EL			Ч	54.0	1.0359	2 * 16	Euro B-Type	
\vdash	- 19		/41										
\vdash	1 0.	BG 311 000	22 ₽		CER		Н						
\vdash	.20	59.34.2226 59.22.5164		1/11			Н	1 /2		***			
L	.24	58.22.5161	-100 LI	46V	EL			1/2	Ec.	2 225-	7 440		
L	11						Н	Q.01		3.0350	3 112		
Г							Ш	.02		3.0350			
Г								.03	50.03	3.0350	3 112		
							LT	.04	50.03	3.0350	3 112		
H	0 302	59 99 51 A	400 JU	25 V	FL		П	.05	50.0	3.0350	3 412		
\vdash		59.22.5464 53.22.5164		-16 V	FI		П	.06	50.0	3.0350	3 112		
\perp	363		100 U	710 V	1-1-	!	<u></u>			NAME	J		
INC		E NANE	000	-0.1100			(IND	DAT	-	MMC	Bu:	BURNDY	
0				ERAMIC					-+				
3				LECTROLYTIC			3		-			SIGNETICX	
2	10.4.		PE: P	OLYESTER		ļ	2	10.4.	25	19	SX:	SILICONX	
0	4.10.	54 %	i			Į.		4.10.					
r	7.8.2	2 TAMAS 44					M	47.8.8	2 TAM	IAS for			
		2 1/0/10/12 72/											
-	_		TRUT SELE	CT08 Pt. 12	12.500,00 PA	ge 1 of 5	-	TUD	ER MA	STER OU	TPUT SEL	_ECTOR PL 1.912.500.00	PAGE
-	STUD		TRUT SELE	STOR PL 1.3	12.500.00 PA	ge 1 of 5	-	امس	EIR MA	STER OL	TPUT SEL	_ECTOR PL 1.912.500.00	PAGE
2	STUD	ER MASTER OU					8				TPUT SEL	LECTOR PL 1.912.500.00	PAGE
2	STUD	ER MASTER OU	VALUE		12.500.00 PAI	MFR	S IND	POS NO	PAR	r NO	VALUE		PAGE
2	POS NO	PART NO 50.03.0350	VALUE			MFR Sx	IND 2	POS NO	PAR 57 . 1	r NO 1 . 4 333	VALUE 33 k		PAGE
2	STUD	ER MASTER OU	VALUE			MFR	1NB 2 2	POS NO R .25	57.1 57.1	1.4333	33 k 40 k	SPECIFICATIONS/EQUIVALENT	PAGE
2	POS NO	PART NO 50.03.0350	VALUE			MFR Sx	2 2 2	POS NO R .25 .26 .27	57.1 57.1 57.1	1.4333 1.4403 1.3362	33 k 40 k 3,6 k		PAGE
2	POS NO	PART NO 50.03.0350	VALUE			MFR Sx	2 2 2	POS NO R .25 .26 .27	57.1 57.1 57.1 57.1	1.4333 1.4403 1.3362	VALUE 33 k 40 k 3,6 k 39 k	SPECIFICATIONS/EQUIVALENT	PAGE
2	POS NO	PART NO 50.03.0350	VALUE			MFR Sx	2 2 2 2	Pos No R .25 .26 .27 .28 .29	57.1 57.1 57.1 57.1	1.4333 1.4403 1.3362 1.4393	33 k 40 k 3,6 k 39 k 2,2 k	SPECIFICATIONS/EQUIVALENT	PAGE
2	OUPOS NO 10,07 .08	PART NO 50.03.0350	J 412 J 412	SPECIFICATIO		MFR Sx	2 2 2 2 2	POS NO R .25 .26 .27 .28 .29 .30	57.1 57.1 57.1 57.1 57.1	1.4333 1.4403 1.3362 1.4393 1.4222	VALUE 33 k 40 k 3,6 k 33 k 2,2 k 2,2 k	SPECIFICATIONS/EQUIVALENT	PAGE
INC	Q.07 .08	PART NO 50.03.0350 50.03.0350	VALUE			MFR Sx	2 2 2 2 2 2 2 2	POS NO R . 25 . 26 . 27 . 28 . 29 . 30 . 31	57.4 57.4 57.4 57.4 57.4 57.4	1.4333 1.4403 1.3362 1.4393 1.4222 1.4222	33 k 40 k 3,6 k 33 k 2,2 k 2,2 k 2,2 k	SPECIFICATIONS/EQUIVALENT	PAGE
INC	Q.07 .08	PART NO 50.03.0350 50.03.0350	J 412 J 412 J 412	SPECIFICATIO		MFR Sx	2 2 2 2 2	POS NO R .25 .26 .27 .28 .29 .30	57.4 57.4 57.4 57.4 57.4 57.4 57.4	1.4333 1.4403 1.4393 1.4393 1.4222 1.4222	33 k 40 k 3,6 k 33 k 2,2 k 2,2 k 2,2 k 2,2 k	SPECIFICATIONS/EQUIVALENT	PAGE
2 2	0 POS NO Q.07 .08 1/2 R.01	PART NO 50.03.0350 50.03.0350 57.11.3562 57.11.4471	VALUE 3 412 3 112 5,6 k 47ο Ω	SPECIFICATIO		MFR Sx	2 2 2 2 2 2 2 2 2 2	POS NO R . 25 . 26 . 27 . 28 . 30 . 31 . 32 . 33	57.4 57.4 57.4 57.4 57.4 57.4 57.4 57.4	1.4333 1.4403 1.3362 1.4393 1.4222 1.4222 1.4222 1.4230	33 k 40 k 3,6 k 33 k 2,2 k 2,2 k 2,2 k 2,2 k 33	SPECIFICATIONS/EQUIVALENT	PAGE
2 2 2	Q.07 .08 1./2 R.01 .02	PART NO 50.03.0350 50.03.0350 57.11.3562 57.11.4771 57.11.4771	VALUE 3 412 3 112 5,6 k 470 Ω 470 Ω	SPECIFICATION 170		MFR Sx	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	POS NO R . 25 . 26 . 27 . 28 . 30 . 31 . 32 . 33	57.4 57.4 57.4 57.4 57.4 57.4 57.4 57.4	1.4333 1.4403 1.3362 1.4393 1.4222 1.4222 1.4222 1.4230	33 k 40 k 3,6 k 33 k 2,2 k 2,2 k 2,2 k 2,2 k 33	SPECIFICATIONS/EQUIVALENT	PAGE
2 2 2	Q.07 .08 1./2 R.01 .02	PART NO. 50. 03.0350 50. 03.0350 57. 11. 3562 57. 11. 4171 57. 11. 4174 57. 11. 3562	J 412 J 412 J 412 5,6 k 470 \(\Omega\)	SPECIFICATIO		MFR Sx	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	R.25 .26 .27 .28 .29 .30 .31 .32 .32	57.4 57.4 57.4 57.4 57.4 57.4 57.4 57.4	1.4333 1.4403 1.3362 1.4393 1.4222 1.4222 1.4222 1.4230	33 k 40 k 3,6 k 33 k 2,2 k 2,2 k 2,2 k 2,2 k 33	SPECIFICATIONS/EQUIVALENT	PAGE
2 2 2 2 2 2	1/2 R.o.1 .02 .03	PART NO 50.03.0350 50.03.0350 57.11.3562 57.11.3562 57.11.3562 57.11.3562 57.11.3562 57.11.3562 57.11.3562 57.11.3562	5,6 k 470 Ω 470 Ω 5,6 k 33 k	SPECIFICATION 170		MFR Sx	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	POS NO R .25 .26 .27 .28 .29 .30 .31 .32 .33 .34 .35	57.4 57.4 57.4 57.4 57.4 57.4 57.4 57.4	1.4333 1.4403 1.3362 1.4393 1.4222 1.4222 1.4222 1.4222 1.4222	33 k 40 k 3,6 k 3,6 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k	SPECIFICATIONS/EQUIVALENT	PAGE
2 2 2 2 2 2 2 2	1/2 R.o.1 .02 .03 .04	PART NO 50. 03. 0350 57. 11. 3562 57. 11. 3562 57. 11. 3414 57. 11. 3417 57. 11. 3562 57. 11. 3762	5,6 k 470 Ω 470 Ω 5,6 k 33 k 33,8 k	SPECIFICATION 170		MFR Sx	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	POS NO R .25 .26 .27 .28 .29 .30 .31 .32 .33 .34 .35	57.4 57.4 57.4 57.4 57.4 57.4 57.4 57.4	1.4333 1.4403 1.3362 1.4393 1.4222 1.4222 1.4222 1.4230 1.4222 1.4222	33 k 40 k 3,6 k 39 k 2,2 k 2,2 k 2,2 k 33 2,2 k 2,2 k 2,2 k 2,2 k	SPECIFICATIONS/EQUIVALENT	PAGE
2 2 2 2 2 2 2 2 2	1/2 R.o1 .02 .03 .04 .05	PART NO 50. 03. 0350 57. 11. 3562 57. 11. 3562 57. 11. 3414 57. 11. 3417 57. 11. 3562 57. 11. 3762	5,6 k 470 Ω 470 Ω 5,6 k 33 k 33,8 k	SPECIFICATION 170		MFR Sx	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	POS NO R . 25 . 26 . 27 . 28 . 30 . 31 . 32 . 33 . 34 . 35 . 36 . 37	57.4 57.4 57.4 57.4 57.4 57.4 57.4 57.4	1.4333 1.4403 1.3362 1.4393 1.4222 1.4222 1.4222 1.4222 1.4222 1.4222	33 k 40 k 3,6 k 3,6 k 2,2 k 2,2 k 2,2 k 2,2 k 3,3 2,2 k 2,2 k 3,3 k 2,2 k 3,3 k	SPECIFICATIONS/EQUIVALENT	PAGE
2 2 2 2 2 2 2 2 2	1/2 R.o1 .02 .03 .04 .05	FAT NO 50. 03. 0350 50. 03. 0350 57. 11. 3562 57. 11. 4471 57. 11. 4471 57. 11. 4473 57. 11. 4325 57. 11. 5106	5,6 k 170 Ω 170 Ω 170 Ω 170 Ω 15,6 k 33 k 3,3 k 40 M	SPECIFICATION 170		MFR Sx	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	POS NO. R . 25 . 26 . 27 . 28 . 30 . 31 . 32 . 33 . 34 . 35 . 36 . 37 . 38	57.4 57.4 57.4 57.4 57.4 57.4 57.4 57.4	1.4333 1.4403 1.4362 1.4393 1.4222 1.4222 1.4222 1.4230 1.4222 1.4222 1.4233 1.4222	33 k 40 k 3,6 k 3,6 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k	SPECIFICATIONS/EQUIVALENT	PAGE
2 2 2 2 2 2 2 2 2	1/2 R.o1 .02 .03 .04 .05	FAT NO 50. 03. 0350 50. 03. 0350 57. 11. 3562 57. 11. 4471 57. 11. 4471 57. 11. 4473 57. 11. 4325 57. 11. 5106	5,6 k 170 Ω 170 Ω 170 Ω 170 Ω 15,6 k 33 k 3,3 k 40 M	SPECIFICATION 170		MFR Sx	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	POS NO R .25 .26 .27 .28 .39 .31 .32 .33 .33 .34 .35 .35 .36 .37	57.4 57.4 57.4 57.4 57.4 57.4 57.4 57.4	1.4333 1.4403 1.4362 1.4393 1.4222 1.4222 1.4222 1.4222 1.4222 1.4222 1.4330 1.4222 1.4333	33 k 40 k 3,6 k 33 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 3,3 k 2,3 k 3,3 k	SPECIFICATIONS/EQUIVALENT	PAGE
2 2 2 2 2 2 2 2 2 2 2 2 2	1/2 R.o1 .o2 .o3 .o4 .o5 .o6	PART NO 50. 03. 0350 50. 03. 0350 57. 11. 3562 57. 11. 4471 57. 11. 4474 57. 11. 4576 57. 11. 41. 433 57. 11. 41. 433 57. 11. 41. 433 57. 11. 41. 436	5,6 k 470 Ω 470 Ω 5,6 k 470 Ω 5,6 k 33 k 40 M 400 M	SPECIFICATION 170		MFR Sx	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	POS NO. R . 25 . 26 . 27 . 28 . 30 . 31 . 32 . 33 . 34 . 35 . 36 . 37 . 38	57.4 57.4 57.4 57.4 57.4 57.4 57.4 57.4	1.4333 1.4403 1.4362 1.4393 1.4222 1.4222 1.4222 1.4222 1.4222 1.4222 1.4330 1.4222 1.4333	33 k 40 k 3,6 k 33 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 3,3 k 2,3 k 3,3 k	SPECIFICATIONS/EQUIVALENT	PAGE
2 2 2 2 2 2 2 2 2 2 2 2 2	1/2 R.o1 .o2 .o3 .o4 .o5 .o6	FART NO 50 . 03 . 0350 50 . 03 . 0350 50 . 03 . 03	5,6 k 470 Ω 470 Ω 5,6 k 33 k 40 M 40 M 40 M 40 M 33 k	SPECIFICATION 170		MFR Sx	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	POS NO R . 25 . 26 . 27 . 28 . 30 . 31 . 32 . 33 . 34 . 35 . 36 . 37 . 38 . 39 . 39 . 31 . 32 . 33 . 34 . 35 . 36 . 37 . 36 . 37 . 38 . 39 . 30 . 30 . 30 . 30 . 30 . 30 . 30 . 30	57.4 57.4 57.4 57.4 57.4 57.4 57.4 57.4	1.4333 1.4403 1.4393 1.4222 1.4222 1.4222 1.4222 1.4222 1.4222 1.4222 1.4233 1.4222 1.4333 1.4223 1.4333	33 k 40 k 3,6 k 33 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 3,3 k 2,3 k 3,3 k	PECIFICATIONS/EQUIVALENT	PAGE
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1/2 R.o1 .02 .05 .06 .07 .08	PART NO 50. 03. 0350 50. 03. 0350 57. 41. 3562 57. 41. 3491 57. 41. 3562 57. 41. 4940 57. 41. 400 57. 41. 400 57. 41. 403 57. 41. 400 57. 41. 433	5,6 k 470 \(\text{412} \) 5,6 k 470 \(\text{47} \) \(\text{47} \) \(\text{4} \) 5,6 k 33 k 3,3 k 40 M 40 M 400 k 33 k	SPECIFICATION 170		MFR Sx	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	POS NO R . 25 . 26 . 27 . 28 . 30 . 31 . 32 . 33 . 34 . 35 . 36 . 37 . 38 . 39 . 39 . 31 . 32 . 33 . 34 . 35 . 36 . 37 . 36 . 37 . 38 . 39 . 30 . 30 . 30 . 30 . 30 . 30 . 30 . 30	57.4 57.4 57.4 57.4 57.4 57.4 57.4 57.4	1.4333 1.4403 1.4393 1.4222 1.4222 1.4222 1.4222 1.4222 1.4222 1.4222 1.4233 1.4222 1.4333 1.4223 1.4333	33 k 40 k 3,6 k 3,8 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 3,3 k 2,2 k 3,3 k 3,3 k	PECIFICATIONS/EQUIVALENT	PAGE
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1./2 R.o1 .02 .03 .04 .05 .05 .06 .07 .08 .09 .10	FAIT NO 50. 03. 0350 50. 03. 0350 50. 03. 0350 50. 03. 0350 50. 03. 0350 50. 03. 0350 50. 03. 0350 50. 03. 0350 50. 03. 0350 50. 03. 0350 50. 03. 0350 50. 03. 0350 50. 03. 0350 50. 03. 03. 03. 03. 03. 03. 03. 03. 03. 0	5,6 k 170 Ω 170 Ω	SPECIFICATION 170		MFR Sx	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Pros No. R . 25 26	57.4 57.4 57.4 57.4 57.4 57.4 57.4 57.4	1.4333 1.4403 1.4393 1.4222 1.4222 1.4222 1.4222 1.4222 1.4222 1.4222 1.4222 1.4333 1.4222 1.4333 1.4223	VALUE 33 k 40 k 3,6 k 8 3,2 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 3,3 k 2,2 k 3,3 k 3,3 k 3,3 k 40 k 6	SPECIFICATIONS/EQUIVALENT	PAGE
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1./2 R.o1 .02 .03 .04 .05 .05 .06 .07 .08 .09 .10	PART NO 50. 03. 0350 50. 03. 0350 50. 03. 0350 50. 03. 0350 50. 03. 0350 57. 41. 4871 57. 41. 3562 57. 41. 4004 57. 41. 4332 57. 41. 4322 57. 41. 4325 57. 41. 4350 57. 41. 4350 57. 41. 4350 57. 41. 4350 57. 41. 4350 57. 41. 4350 57. 41. 4350 57. 41. 4350 57. 41. 4350 57. 41. 4350 57. 41. 4350 57. 41. 5106	5,6 k 470 Ω 470 Ω 470 Ω 470 Ω 470 Ω 5,6 k 33 k 3,3 k 40 M 40 M 40 M 40 M 40 M 40 M 40 M 40 M	SPECIFICATION 170		MFR Sx	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	POS NO PO	57.4 57.4 57.4 57.4 57.4 57.4 57.4 57.4	1, 4333 1, 4403 1, 4336 1, 4323 1, 4222 1, 4222 1, 4222 1, 4222 1, 4222 1, 4222 1, 4333 1, 4333 1, 4333 1, 4332 1, 4333	VALUE 33 k 40 k 3,6 k 3,6 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 3,3 k 3,3 k 3,3 k 40 k	PECIFICATIONS/EQUIVALENT 1% Pos. Log. Pot	PAGE
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	9.705 NO 10 10 10 10 10 10 10 10 10 10 10 10 10	57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3762 57. 11. 3762	5,6 k 470 a 410 a 470 a 470 a 470 a 470 a 400 k 33 k 40 M 400 k 33 k 40 M 40 M	SPECIFICATION 170		MFR Sx	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Pos No. 25 . 26 . 27 . 28 . 29 . 30 . 31 . 32 . 33 . 35 . 36 . 37 . 38 . 39 . 40 . 41 . 42 . 43 . 44	57 . 4 57 . 4 57 . 4 57 . 4 57 . 4 57 . 4 57 . 4 57 . 4 57 . 4 57 . 4 57 . 4 57 . 4 57 . 4 57 . 4 57 . 4 57 . 4 57 . 4 57 . 4	1, 4333 1, 4463 1, 4362 1, 4393 1, 4222 1, 4222 1, 4222 1, 4222 1, 4222 1, 4222 1, 4333 1, 4222 1, 4333 1, 4333 1, 4332 1, 4332 1, 4332 1, 4332 1, 4332	VALUE 33 k 40 k 3,6 k 33 k 2,2 k 2,2 k 2,2 k 2,2 k 3,3 c 2,2 k 2,2 k 3,3 k 2,2 k 3,3 k 40 k 40 k	PROS. LOGO. POT	PAGE
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	9.705 NO 10 10 10 10 10 10 10 10 10 10 10 10 10	PART NO 50. 03. 0350 50. 03. 0350 50. 03. 0350 50. 03. 0350 50. 03. 0350 57. 41. 4871 57. 41. 3562 57. 41. 4304 57. 41. 4304 57. 41. 4304 57. 41. 4305 57. 41. 4305 57. 41. 4307 57. 41. 4307 57. 41. 4307 57. 41. 4307 57. 41. 4307 57. 41. 4307 57. 41. 4307 57. 41. 4307 57. 41. 4307 57. 41. 4307	5,6 k 470 Ω 470 Ω 470 Ω 470 Ω 470 Ω 5,6 k 33 k 3,3 k 40 M 40 M 40 M 40 M 40 M 40 M 40 M 40 M	SPECIFICATION 170		MFR Sx	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	POS NO 10 POS NO	57 .4. 57 .4.	1, 4333 1, 4463 1, 4463 1, 4362 1, 4222 1, 4222 1, 4222 1, 4330 1, 4222 1, 4333 1, 4222 1, 4333 1, 4222 1, 4333 1, 433	33 k 40 k 3,6 k 3,6 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 3,3 k 2,2 k 3,3 k 3,3 k 40 k 40 k 4,7 k	POS. LOG. POT	PAGE
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1/2 1	PART NO 50. 03. 0350 50. 03. 0350 50. 03. 0350 50. 03. 0350 50. 03. 0350 57. 41. 4871 57. 41. 3562 57. 41. 4304 57. 41. 4304 57. 41. 4304 57. 41. 4305 57. 41. 4305 57. 41. 4307 57. 41. 4307 57. 41. 4307 57. 41. 4307 57. 41. 4307 57. 41. 4307 57. 41. 4307 57. 41. 4307 57. 41. 4307 57. 41. 4307	5,6 k 470 a 410 a 470 a 470 a 470 a 470 a 400 k 33 k 40 M 400 k 33 k 40 M 40 M	SPECIFICATION 170		MFR Sx	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	POS NO ID POS NO	57 . 4 57 . 4 57 . 4 57 . 4 57 . 4 57 . 4 57 . 4 57 . 4 57 . 4 57 . 4 57 . 4 57 . 4 57 . 4 57 . 4 57 . 4 57 . 4 57 . 4 57 . 4	1, 4333 1, 4463 1, 4463 1, 4362 1, 4222 1, 4222 1, 4222 1, 4330 1, 4222 1, 4333 1, 4222 1, 4333 1, 4222 1, 4333 1, 433	VALUE 33 k 40 k 3,6 k 3,6 k 2,2 k 2,2 k 2,2 k 2,2 k 3,3 k 2,2 k 3,3 k 4,2 k 3,3 k 4,0 k 4	PECIFICATIONS/EQUIVALENT 1% Pos. Lag. Pot Neg. Lag. Pot	PAGE
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	9 POS NO PO NO PO NO PO NO PO NO PO PO NO PO PO PO PO PO PO PO PO PO PO PO PO PO	57, 11, 3562 57, 11, 3562 57, 11, 3562 57, 11, 4474 57, 11, 4474 57, 11, 4574 57, 14, 4303 57, 14, 4303	5,6 k 170 0 170 0	SPECIFICATION 170		MFR Sx	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	POS NO INC. R. 25 . 26 . 27 . 28 . 28 . 30 . 31 . 32 . 33 . 34 . 35 . 36 . 37 . 38 . 39 . 40 . 41 . 42 . 43 . 44 . 45 . 44 . 45 . 444 . 45 . 444 . 45 . 444 . 45 . 444 . 45 . 444 . 447	57.4. 57.4.	1.4333 1.4103 1.3462 1.4323 1.4222 1.4222 1.4230 1.4222 1.4330 1.4222 1.4332 1.4222 1.4332 1.4222 1.4332 1.4222 1.4332 1.	33 k 40 k 3,6 k 3,6 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 3,3 k 2,2 k 3,3 k 3,3 k 40 k 40 k 4,7 k	POS. LOG. POT NEG. LOG. POT POS. LOG. POT POS. LOG. POT POS. LOG. POT POS. LOG. POT	PAGE
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1/2 1/4 1	57. 11. 3562 57. 11. 3562	5,6 k 470 Ω 1402 1412 5,6 k 470 Ω 470 Ω 470 Ω 470 Ω 40 M 40 M	SPECIFICATION 170		MFR Sx	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	POS NO INC. R. 25 . 26 . 27 . 28 . 28 . 30 . 31 . 32 . 33 . 34 . 35 . 36 . 37 . 38 . 39 . 40 . 41 . 42 . 43 . 44 . 45 . 44 . 45 . 444 . 45 . 444 . 45 . 444 . 45 . 444 . 45 . 444 . 447	57 .4. 57 .4.	1.4333 1.4103 1.3462 1.4323 1.4222 1.4222 1.4230 1.4222 1.4330 1.4222 1.4332 1.4222 1.4332 1.4222 1.4332 1.4222 1.4332 1.	VALUE 33 k 40 k 3,6 k 3,6 k 2,2 k 2,2 k 2,2 k 2,2 k 3,3 k 2,2 k 3,3 k 4,2 k 3,3 k 4,0 k 4	PECIFICATIONS/EQUIVALENT 1% Pos. Lag. Pot Neg. Lag. Pot	PAGE
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1./2 R.o1 02 03 04 05 06 07 08 09 04 01 01 01 02 03 04 01 04 01	FAIT NO 50. 03. 0350 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 1362 57. 11. 1404 57. 11. 15106 57. 11. 15106 57. 11. 15106 57. 11. 15106 57. 11. 15106	5,6 k 170 Ω 5,6 k 170 Ω 5,6 k 170 Ω 5,6 k 33 k 33 k 40 M 400 k 33,8 k 10 M 400 k 33,8 k 10 M 400 k 33,8 k 10 M 40 M 40 M 40 M 40 M 40 M 40 M 40 M 4	SPECIFICATION 170		MFR Sx	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	POS NO. R. 25, 26 . 26 . 27 . 28 . 30 . 31 . 32 . 33 . 34 . 35 . 36 . 37 . 40 . 41 . 42 . 41 . 45 . 44 . 45 . 44 . 45 . 44 . 44	57 .4. 57 .4.	1.4333 1.4103 1.3462 1.4323 1.4222 1.4222 1.4230 1.4222 1.4330 1.4222 1.4332 1.4222 1.4332 1.4222 1.4332 1.4222 1.4332 1.	Value 33 k 40 k 3,6 k 3,6 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 3,3 k 2,2 k 3,3 k 40 k 40 k 40 k 40 k 40 k 40 k	POS.LOG. POT NEO.LOG. POT POS.LOG. POT NEO.LOG. POT POS.LOG. POT POS.LOG. POT POS.LOG. POT POS.LOG. POT	PAGE
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	D POS NO Q . O7 . 08 4. /2 R . o1 . 02 . 03 . 04 . 05 . 06 . 07 . 08 . 09 . 10 . 11 . 12 . 03 . 04 . 04 . 05 . 04 . 05 . 04 . 05 . 04 . 05 . 05 . 06 . 07 . 08 . 09 . 09	57. 11. 3562 57. 11. 3562	5.6 k. 170 a. 5.6 k. 170 a. 5.6 k. 3.3 k. 3.	SPECIFICATION 170		MFR Sx	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	POS NO. 18.25 .26.277 .28.30 .30.31 .32.33 .35.36 .37 .38.33 .40 .41 .42.45 .444 .45.41 .45.41 .45.41 .46.447 .46.447	PART 1 57.4 57.4 57.4 57.4 57.4 57.4 57.4 57.4	1, 4333 1, 4423 1, 4323 1, 4322 1, 4322 1, 4222 1, 4222 1, 4222 1, 4222 1, 4233 1, 4222 1, 4333 1, 4332 1, 433	33 k 40 k 3,6 k 3,6 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 3,3 k 3,3 k 40 k 40 k 40 k 40 k 40 k 40 k 40 k 40	POS. LOG. POT NEG. LOG. POT POS. LOG. POT POS. LOG. POT POS. LOG. POT POS. LOG. POT	PAGE
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	0 POS NO. 0 Q. 0.07 . 0.8	57. 11. 3562 57. 11. 3562	5,6 k 17 0 0 5,6 k 170 0 5,6 k 170 0 5,6 k 33 k 40 M 40 M 40 k 33 k 40 M 40 M	SPECIFICATION 170		MFR Sx	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	POS NO. P. 25	PAR 57.4 57.4 57.4 57.4 57.4 57.4 57.4 57.4	1, 433, 433, 433, 433, 433, 433, 433, 43	VALUE 33 k 40 k 3,6 k 3,6 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 3,3 k 2,2 k 3,3 k 4,0 k 4,0 k 4,0 k 4,0 k 4,0 k 4,0 k 4,0 k 4,0 k 4,0 k 4,0 k	POS.LOG. POT NEO.LOG. POT POS.LOG. POT NEO.LOG. POT POS.LOG. POT POS.LOG. POT POS.LOG. POT POS.LOG. POT	PAGE
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1./2 R. o.1 o.2 o.3 o.5 o.6 o.7 o.8 o.9 o.1 d. 42 d. 43 d. 45 d. 45 d. 46 d. 47 d. 48 d. 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3566	5,6 k, 170 a, 17	SPECIFICATION 170		MFR Sx	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	POS NO P. 25 26 27 28 28 28 30 31 32 33 34 35 36 37 38 34 41 45 44 45 44 45 24 7 24 6 24 7 48 44 45 44 45 44 45 44 45 44 45 44 45 44 45 44 45 44 45 44 45 44 45 44 45 44 45 44 45 44 45 44 45	PARK 57.4.1 57.4	1, 433 1, 433 1, 433 1, 436 1, 433 1, 432 1, 422 1, 422 1, 422 1, 422 1, 422 1, 433 2, 432 1, 433 2, 432 1, 433 2, 432 1, 433 2, 432 1, 433 2, 434 2, 434	VALUE 33 k 40 k 3,6 k 3,6 k 2,2 k 2,2 k 2,2 k 2,2 k 2,2 k 3,3 k 3,3 k 40	POS.LOG. POT NEO.LOG. POT POS.LOG. POT NEO.LOG. POT POS.LOG. POT POS.LOG. POT POS.LOG. POT POS.LOG. POT	PAGE	
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1./2 R. o.1 8. o.1 	FAIT NO 50. 03. 0350 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3566	VALUE J 4/12 J	SPECIFICATION 170		MFR Sx	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	POS NO P. 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 44 45 447 246 247 48 49 247 48 50 35 39 39 39 39 30 30 30 30	7AR 57.4. 57	(**No*) (**1,4333*) (**1,4333*) (**1,4333*) (**1,4322*) (**1,4322*) (**1,4322*) (**1,4322*) (**1,4322*) (**1,4322*) (**1,4323*) (**1,4323*) (**1,4323*) (**1,4323*) (**1,4333*) (**1,4333*) (**1,4333*) (**1,4333*) (**1,4333*) (**1,4333*) (**1,4333*) (**1,4333*) (**1,4333*) (**1,4332*	VALUE 33 k 40 k 3,6 k 3,6 k 32,2 k 2,2 k 2,2 k 2,2 k 3,3 k 2,2 k 3,3 k 4,0 k	POS.LOG. POT NEO.LOG. POT POS.LOG. POT NEO.LOG. POT POS.LOG. POT POS.LOG. POT POS.LOG. POT POS.LOG. POT	PAGE
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1./2 R. o.1 o.2 o.3 o.5 o.6 o.7 o.8 o.9 o.1 d. 42 d. 43 d. 45 d. 45 d. 46 d. 47 d. 48 d. 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3566	VALUE J 412 J 41	SPECIFICATION 170		MFR Sx	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	POS NO. R . 255 . 266 . 267 . 288 . 29 . 30 . 31 . 32 . 33 . 34 . 35 . 36 . 37 . 40 . 41 . 45 . 41 . 45 . 41 . 41 . 41 . 41	7AR 57.4. 57	(**No*) (**1,4333*) (**1,4333*) (**1,4333*) (**1,4322*) (**1,4322*) (**1,4322*) (**1,4322*) (**1,4322*) (**1,4322*) (**1,4323*) (**1,4323*) (**1,4323*) (**1,4323*) (**1,4333*) (**1,4333*) (**1,4333*) (**1,4333*) (**1,4333*) (**1,4333*) (**1,4333*) (**1,4333*) (**1,4333*) (**1,4332*	VALUE 33 k 40 k 3,6 k 3,6 k 32,2 k 2,2 k 2,2 k 2,2 k 3,3 k 2,2 k 3,3 k 4,0 k	POS.LOG. POT NEO.LOG. POT POS.LOG. POT NEO.LOG. POT POS.LOG. POT POS.LOG. POT POS.LOG. POT POS.LOG. POT	PAGE	
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	0 POS NO 10 POS	57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 5106 57. 11. 5106 57. 11. 5106 57. 11. 13. 57. 11. 11. 57. 11. 5	VALUE J 412 J 41	SPECIFICATION 170		MFR Sx	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	POS NO P. 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 44 45 447 246 247 48 49 247 48 50 35 39 39 39 39 30 30 30 30	7AR 57.4. 57	1, 433 1, 433 1, 433 1, 436 1, 433 1, 432 1, 422 1, 422 1, 422 1, 422 1, 422 1, 433 2, 432 1, 433 2, 432 1, 433 2, 432 1, 433 2, 432 1, 433 2, 434 2, 434	VALUE 33 k 40 k 3,6 k 3,6 k 32,2 k 2,2 k 2,2 k 2,2 k 3,3 k 2,2 k 3,3 k 4,0 k	POS.LOG. POT NEO.LOG. POT POS.LOG. POT NEO.LOG. POT POS.LOG. POT POS.LOG. POT POS.LOG. POT POS.LOG. POT	PAGE
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	9 POS NO. 10 POS NO. 1	57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 4141 57. 11. 3562 57. 11. 4140 57. 11. 5106	VALUE J 412 J 41	SPECIFICATION 170		MFR Sx	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	POS NO. R . 255 . 266 . 267 . 288 . 29 . 30 . 31 . 32 . 33 . 34 . 35 . 36 . 37 . 40 . 41 . 45 . 41 . 45 . 41 . 41 . 41 . 41	PART 1 PA	(**No*) (**1,4333*) (**1,4333*) (**1,4333*) (**1,4322*) (**1,4322*) (**1,4322*) (**1,4322*) (**1,4322*) (**1,4322*) (**1,4323*) (**1,4323*) (**1,4323*) (**1,4323*) (**1,4333*) (**1,4333*) (**1,4333*) (**1,4333*) (**1,4333*) (**1,4333*) (**1,4333*) (**1,4333*) (**1,4333*) (**1,4332*	33 k 40 k 4 33 3 k 40 k 4 6 k 4 6 k 4 6 k 4 6 8 3 3 3 k 4 6 k 4 6 8 6 8 6 8 6 8 6 8 6 8 6 8 6 8 6 8 6	POS.LOG. POT NEG.LOG. POT POS.LOG. POT NEG.LOG. POT POS.LOG. J	PAGE
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	D POS NO! D POS	57. 11. 3562 57. 11. 3562	VALUE J 412 J 41	SPECIFICATION 170		MFR Sx	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	POS NO IR . 255 . 266 . 267 . 288 . 29 . 30 . 31 . 32 . 33 . 34 . 35 . 36 . 37 . 40 . 41 . 45 . 41 . 45 . 41 . 41 . 45 . 50 . 51 52	PART 1 PA	1, 4332 1, 4333 1, 4333 1, 4333 1, 4333 1, 4322 1, 4322 1, 4322 1, 4332 1,	33 k 40 k 4 33 3 k 40 k 4 6 k 4 6 k 4 6 k 4 6 8 3 3 3 k 4 6 k 4 6 8 6 8 6 8 6 8 6 8 6 8 6 8 6 8 6 8 6	POS.LOG. POT NEO.LOG. POT POS.LOG. POT NEO.LOG. POT POS.LOG. POT POS.LOG. POT POS.LOG. POT POS.LOG. POT	PAGE
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1/2 R. o.1 R. o.1 	57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3762	VALUE J 412 J 41	SPECIFICATION 170		MFR Sx	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	POS NO PO	57.4. 57.	1, 4332 1, 4333 1, 4333 1, 4333 1, 4333 1, 4322 1, 4322 1, 4322 1, 4332 1,	33 k 40 k 4 33 3 k 40 k 4 6 k 4 6 k 4 6 k 4 6 8 3 3 3 k 4 6 k 4 6 8 6 8 6 8 6 8 6 8 6 8 6 8 6 8 6 8 6	POS.LOG. POT NEG.LOG. POT POS.LOG. POT NEG.LOG. POT POS.LOG. J	PAGE
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1./2 R.od. 1./2 R.od. 0.2. 0.3. 0.5. 0.6. 0.7. 0.8. 0.9. 0.9. 0.1. 0.1. 0.1. 0.2. 0.3. 0.4. 0.5. 0.6. 0.7. 0.8. 0.9.	57. 11. 3562 57. 11. 3562	VALUE J 412 J 41	SPECIFICATION 170		MFR Sx	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	POS NO PO	PART 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 No 1 . 14333 1 . 14133 1 . 1416 3 . 1	33 k 40 k 4 33 3 k 40 k 4 6 k 4 6 k 4 6 k 4 6 8 3 3 3 k 4 6 k 4 6 8 6 8 6 8 6 8 6 8 6 8 6 8 6 8 6 8 6	POS.LOG. POT NEG.LOG. POT POS.LOG. POT NEG.LOG. POT POS.LOG. J	PAGE
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1/2 1/2.	57. 11. 3562 57. 11. 3562	VALUE J 412 J 41	SPECIFICATION 170		MFR Sx	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	POS NO PO	PART 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1, 4332 1, 4333 1, 4333 1, 4333 1, 4333 1, 4322 1, 4322 1, 4322 1, 4332 1,	33 k 40 k 4 33 3 k 40 k 4 6 k 4 6 k 4 6 k 4 6 8 3 3 3 k 4 6 k 4 6 8 6 8 6 8 6 8 6 8 6 8 6 8 6 8 6 8 6	POS.LOG. POT NEG.LOG. POT POS.LOG. POT NEG.LOG. POT POS.LOG. J	PAGE
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1. 1	FART NO 50. 03. 0350 57. 11. 3562 57. 11. 3562 57. 11. 4971 57. 11. 4974 57. 11. 4966 57. 11. 4933 57. 11. 4966 57. 11. 4933 57. 11. 4966 57. 11. 4933 57. 11. 4966 57. 11. 4933 57. 11. 4966 57. 11. 4933 57. 11. 4966	VALUE J 412 J 41	SPECIFICATION 170		MFR Sx	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	POS NO PO	57.4. 57.4.	1 No 1 . 14333 1 . 14133 1 . 1416 3 . 1	33 k 40 k 4 33 3 k 40 k 4 6 k 4 6 k 4 6 k 4 6 8 3 3 3 k 4 6 k 4 6 8 6 8 6 8 6 8 6 8 6 8 6 8 6 8 6 8 6	POS.LOG. POT NEG.LOG. POT POS.LOG. POT NEG.LOG. POT POS.LOG. POT	PAGE
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1/2 1/2.	57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3562 57. 11. 3566 57. 11. 3562 57. 11. 3566	VALUE J 4/12 J 4/12 J 4/12 J 4/12 J 4/12 J 4/12 J 4/10 A	##CIFICATE 176 176		MFR SX \	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	POS NO 10 POS NO	57.4.57.4.57.4.57.4.57.4.57.4.57.4.57.4	1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1	33 k 40 k 22 k 22 k 22 k 22 k 22 k 22 k 22	POS.LOG. POT NEG.LOG. POT POS.LOG. POT NEG.LOG. POT POS.LOG. POT	

IND POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
+				-
R 302	57.99.0206	20 V	PTC	
302	57.99.0209	5,6 A	PTC	
364	57,99.0209	5,6 Ω	PTC	
305	54.11.4402	1 k		
306	54.11.4471	470 A		
307	54.11.4471	470 sl		
1/2				_
5.01	55.45,0002	2 p	Pushburton	
13.01	55.03.c3o3	~ ~	KNOB GREY/WITHE	
.02	55.15.0002	2 _P	PUSHBUTTON	
1.04	55.03.0303		KNOB GREY/WITHE	
.03	55.45.002	2p	PUSHBUTTON	
1.05	55.03.0303		KNOB GREY/WITHE	
.оч	55.15.0002	2p	Pushbutton	
	55.03.0303		KNOB GREY/WITHE	
	00.401004-			
\Box				+
IND DATE	I NAME I			
(1)	mom.			
ŏl				
16.4.8	35 &			
0 4.6.6				
0 41.8.22				
- 1 - 1 - 1 - 1 - 2	EUR MASTER OUT		TOR PL 1.912.500.00 PA	c c

Monitor Mixer 1.912.510/511 / Filter Board 1.912.598



Monitor Mixer 1.912.510/511



SECTION 5

Monitor Mixer 1.912.510/511

	POS NO	PAR		VALUE	SPECIFICATIONS/EQUIVALENT	MFR	IND	POS NO		ART NO	VALUE	Seci	ICATIONS/EQUIVALENT	r ^
	A4	1.912.5	99.00		push betton PCB	Studen	_	C/153	59.06		6,8 n			
								C454	59.06	0682	6,8 n			
	C1	59.22.5	101	100m				C304	C35	4 = C101.	C154			
	C 2	59.22.5		ىر100										
\neg	C 3	59.22.5		سر400	11/		\vdash							
-	C4	59,22.5		سر 100			\vdash	DI	50.04.	0425	4N 4448			
						_	\vdash	02	50.04		1114448			
4	C 5	59.34.4	101	1∞ p			-	DAM						
_							-	-	50.04		4N4448			-+
	C404	59,05.4	684	680 p	1%		_	D402	50.04		1N4448			
	C402	59.05.4	1684	680p	1%			D403	50.04	,0125	4N4448			
	C403*	59.06.0	682	6,8 n	*		1	D404	50.04	.0125	4N4448			
	C 404	59,26.0		68,u	1			D105	50.04	0125	4N4448			- 1
	C405	59.26.0	0680	68,u	+		Γ	0406	50,04	.0125	4N4448			
	C106	59.34.2		400p	2% †		(A)		50.04		484448			
-							F	D304.		= DA04 D4				
_	C407	59.34,2		400 p	2% †	-+-	\vdash	Dour	. 0301	- 0404 04	-			
_	C408	59.34.2		22p			\vdash							
_	C 409*	59.34.2		22p	*		\vdash	DL101		.040.50	CQY44 NA	red		
_	C440*	59.26,0		68,u	*		<u> </u>	DL402		.040.50	CQY44 NA	red		
_	CAAA	59.26.0		48,4			L	DL103	1.010	.040.50	C QY41NA	red		
	C442	59.06.0	2682	6,8 n			. L	DL304	DL30	3 = DL104.	DL103			
_	C413	59.26.0		68 m										
	C444			22 p			\vdash							
		59.34.2	2220			-+	\vdash	IC.4	50.00	5.02.43	NE 5534 N			-+
	C415	59.22.2		220ju	-		\vdash							+
	C116	59.34.2		22 p		-	1	IC404	50.09		NE 5534 N			
	C/47	59.26.0		68,m			\perp	IC 102		5.02,43	NE 5534 N			
_	C448	59.06.0	2882	6,8n			L	IC403		5.0243	NE 5534N			
	C449	59.26.0	0890	68,u	1		L	IC404	50.09	5.0243	NE 5534N			
_	C420	59,34.2		22p				IC405		5,0243	NE 5534 N			
_	C424	59.26.0						10406		5.0243	NE 5534 N			
-				68m				10407		.0243	NE5534N			
L.	C422			330p							INE SOSTAI			
IND	DA.	TE	NAME				IN		TE	NAME				
0				option :	with input trafo		0							
3			ı.	* only	trafo version		(3	_			1			
0	4-4	lo-84	ya .	t only	normal Version		(2	9.4c	.84	R.]			
(i)	24-	12-83	129	this posi	tion list is also valid for MON	NITOR MIXER	0	21-4	2-83	rey	1			
ř	18-		Ny	WITH ED	TER 1.912.541 (see also pos.Lis	1 4 442 5401	lĈ			MY	1			
_	TU			OR MIX		PAGE 4 OF 40	_	STU			OR MIXE			PAGE 3
_	POS N	PA PA	RT NO	VALUE 68,JL	SPECIFICATIONS/EQUIVALENT		_	D POS NO	2	MONITO	VALUE NE5534 N		IFICATIONS/EQUIVALEN	
_	TU	PA 59.26.	RT NO 0680	VALUE		PAGE 4 OF 40	_	DJ POS NO	500	PART NO	VALUE			
_	C 424	59.26. 59.34.	RT NO 0680 4400	VALUE 68,0 40 p		PAGE 4 OF 40	_	D POS NO	50.0	PART NO 5.0243 5.0243	VALUE NE 5534 N NE 5534 N			
_	C 424	59.26. 59.34. 59.22.	RT NO 0680 4400 2224	68,00 40 p 220,00		PAGE 4 OF 40	_	IC/108	50.0 50.0	PART NO 5.0243 5.0243 5.0243	VALUE NE 5534 N			
_	C423 C424 C425 C426	59.26. 59.34. 59.22. 59.06.	RT NO 06 8 0 4 4 0 0 22 2 4	48 pc 40 p 220 pc 220 pc		PAGE 4 OF 40	_	ICA08	500 500 500	5.0243 5.0243 5.0243 5.0243 5.0243	VALUE NE 5534 N NE 5534 N NE 5534 N NE 5534 N	SPEC	IFICATIONS/EQUIVALEP	
_	C424 C425 C424 C425 C426	59.26. 59.34. 59.22. 59.06.	RT NO 0680 4400 2224 0223	68 pc 40 p 220 pc 22 n 22 n		PAGE 4 OF 40	_	IC408 IC408 IC409 IC440 IC440	50.0 50.0 50.0 50.0	5.0243 5.0243 5.0243 5.0243 5.0243 7.0027	VALUE NE 5534 N NE 5534 N NE 5534 N NE 5534 N 4027 BPC	WC\40	ifications/equivalents 278CP	
_	C423 C423 C424 C425 C425 C425	59.26. 59.34. 59.22. 59.06. 59.06.	RT NO 0680 4400 2224 0223 0223	68,0 40 p 220,0 22 n 22 n 22 n		PAGE 4 OF 40	_	ICA08 ICA09 ICA10 ICA10 ICA11 ICA12 ICA12	500 500 500 500 500 500 500	PART NO 5.0243 5.0243 5.0243 5.0243 7.0027	VALUE NE 5534 N NE 5534 N NE 5534 N NE 5534 N 4027 BPC 4027 BPC	SPEC	ifications/equivalent	
_	C423 C423 C424 C425 C426 C426 C427 C429	59.26. 59.34. 59.32. 59.06. 59.06. 59.06.	RT NO 0680 4400 2224 0223 0223 0223	68,00 40 p 220,00 22 n 22 n 22 n 22 n		PAGE 4 OF 40	_	IC408 IC408 IC409 IC440 IC440	500 500 500 500 500 500 500	5.0243 5.0243 5.0243 5.0243 5.0243 7.0027	VALUE NE 5534 N NE 5534 N NE 5534 N NE 5534 N 4027 BPC	WC\40	ifications/equivalent	
_	C423 C424 C425 C424 C425 C426 C426 C426 C426 C426	59.26. 59.34. 59.22. 59.06. 59.06. 59.06. 59.06.	RT NO 06 8 0 4 4 0 0 22 2 4 02 2 3 02 2 3 02 2 3 02 2 3 02 2 3	22n 22n 22n 22n 22n 22n 22n		PAGE 4 OF 40	_	ICA08 ICA09 ICA10 ICA10 ICA11 ICA12 ICA12	500 500 500 500 500 500 500	PART NO 5.0243 5.0243 5.0243 5.0243 7.0027	VALUE NE 5534 N NE 5534 N NE 5534 N NE 5534 N 4027 BPC 4027 BPC	WC\40	ifications/equivalent	
_	C423 C423 C424 C425 C426 C426 C426 C426	59.26. 59.34. 59.34. 59.22. 59.06. 59.06. 59.06. 59.06.	RT NO 06 8 0 4 4 0 0 22 2 4 02 2 3 02 2 3 02 2 3 02 2 3 02 2 3	68,00 40 p 220,00 22 n 22 n 22 n 22 n		PAGE 4 OF 40	_	ICA08 ICA09 ICA10 ICA10 ICA11 ICA12 ICA12	500 500 500 500 500 500 500	PART NO 5.0243 5.0243 5.0243 5.0243 7.0027	VALUE NE 5534 N NE 5534 N NE 5534 N NE 5534 N 4027 BPC 4027 BPC	WC\40	ifications/equivalent	
_	C423 C424 C425 C424 C425 C426 C426 C426 C426 C426	59.26. 59.34. 59.22. 59.06. 59.06. 59.06. 59.06. 59.06.	RT NO 0680 4400 2224 0223 0223 0223 0223 0223 0223	22n 22n 22n 22n 22n 22n 22n		PAGE 4 OF 40	_	ICA08 ICA09 ICA10 ICA10 ICA11 ICA12 ICA12	50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00	PART NO 5.0243 5.0243 5.0243 5.0243 7.0027	VALUE NE 5534 N NE 5534 N NE 5534 N NE 5534 N 4027 BPC 4027 BPC	WC\40	IFICATIONS/EQUIVALEN 27-8CP	
_	C423 C423 C424 C425 C426 C426 C426 C426 C436 C436	59.26. 59.22. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06.	0680 0400 2224 0223 0223 0223 0223 0223 0223 0223 0223	VALUE 68,4. A0 p 220,4. 22 n 22 n 22 n 22 n 22 n 22 n 22 n 22		PAGE 4 OF 40	_	ICA09 ICA09 ICA10 ICA10 ICA11 ICA12 ICA12 ICA12 ICA13 ICA13 ICA30	50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0	PART NO 5.0243 5.0243 5.0243 5.0243 7.0027 7.0027 13 = K.103	VALUE NE 5534 N NE 5534 N NE 5534 N NE 5534 N HO27BPC HO27BPC	MCN40	IFICATIONS/EQUIVALEN 27 BCP 27 BCP	NT
_	C423 C423 C424 C425 C426 C426 C426 C436 C436 C436 C437 C433	59.26. 59.34. 59.22. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06.	RT NO 06 8 0 44 0 0 22 2 4 02 2 3 02 2 3 02 2 3 02 2 3 02 2 3 02 2 3 02 2 3	22n 22n 22n 22n 22n 22n 22n 22n 22n 22n		PAGE 4 OF 40	_	IC409 IC409 IC401 IC404 IC401	50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0	PART NO 5.0243 5.0243 5.0243 5.0243 7.0027 7.0027 43 = K403 3.0545	NE5534 N NE5534 N NE5534 N NE5534 N NE5534 N HO27BPC HO27BPC ICAI3	MCN40 MCN40 MCN40	IFICATIONS/EQUIVALEN 27BCP 27BCP	WT
_	C423 C424 C425 C426 C426 C426 C426 C436 C436 C437 C433 C434	59.26. 59.26. 59.26. 59.22. 59.26. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06.	RT NO 0680 4400 2224 0223 0223 0223 0223 0223 022	220 22n 22n 22n 22n 22n 22n 22n 22n 22n		PAGE 4 OF 40	_	IC409 IC409 IC409 IC409 IC403 IC403 IC500	50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0	7.0027 7.0027 7.0027 7.0027 7.0027 7.0027 7.0027 7.0027 7.0027 7.0027 7.0027 7.0027 7.0027 7.0027 7.0027	NE5534 N NE5534 N NE5534 N NE5534 N NE5534 N HO27BPC HO27BPC HO27BPC BC307 b	MC/40 MC/40 or equ or equ MPF43	IFICATIONS/EQUIVALEN 27BCP 27BCP	WT
_	C423 C423 C424 C425 C425 C425 C425 C436 C434 C432 C434 C434 C434 C434	59.26. 59.26. 59.26. 59.26. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06.	AT NO 0680 4400 2224 0223 0223 0223 0223 0223 022	22n 22n 22n 22n 22n 22n 22n 22n 22n 22n		PAGE 4 OF 40	_	IC409 IC409 IC409 IC409 IC401	50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0	PART NO 5.0243 5.0243 5.0243 5.0243 7.0027 43 = 16.403 3.0545 3.0545 3.0550	NE5534 N NE5534 N NE5534N NE5534N NE5534N H027BPC H027BPC . ICM3 BC307b BC307b J442	MC/40 MC/40 MC/40 or equ or equ MPF43	IFICATIONS/EQUIVALEN 27 BCP 27 BCP Valent valent valent 32	VY
_	D POS NO C422 C424 C425 C426 C426 C436 C436 C436 C437 C436 C436 C436 C436 C436 C436 C436 C436	59.26. 59.26. 59.34. 59.22. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06.	RT NO 0680 4400 2224 0223 0223 0223 0223 0223 022	22n 22n 22n 22n 22n 22n 22n 22n 22n 22n		PAGE 4 OF 40	_	IC408 IC409 IC416 IC414 IC414 IC30 IC30 IC30 IC30 IC30 IC410 IC401	50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00 50.00	FART NO 5.0243 5.0243 5.0243 5.0243 7.0027 7.0027 43 = K493 3.0545 3.0545 3.0545 3.0350 7.0350	VALUE NE5534 N NE5534 N NE5534N NE5534N NE5534N NE5534N NE5534N H0278PC H0278PC H0278PC J0443 8C307b 8C307b J1412 J442 J442	MC/40 MC/40 OF equi	1 STATIONS/EQUIVALEN 27BCP 27BCP Valent valent 42 32	VY
_	C122 C122 C122 C122 C122 C122 C122 C122	59.26. 59.26. 59.34. 59.22. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06.	RT NO 0680 4400 2224 0223 0223 0223 0223 0223 022	VALUE 68,µ A0 p 220,n 22 n 22 n 22 n 22 n 22 n 22 n 22 n 22		PAGE 4 OF 40	_	IC/108 IC/109 IC	50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0	PART NO 5.0243 5.0243 5.0243 5.0243 7.0027 7.002	VALUE NE5534 N NE5534N NE5534N NE5534N H0278PC 40278PC L0278PC	MC/40 MC/40 MC/40 or equ or equ MPF43 MPF43 MPF43	IFICATIONS/EQUIVALEN 27-BCP 22-BCP Valent valent 42 32 32 32	VY
_	C132 C132 C122 C122 C122 C122 C122 C132 C13	59.26. 59.26. 59.34. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06.	0680 0680 0400 0224 0223 0226 0226 0226 0227 0228 0229	VALUE 68,µ A0p 220,µ 22n 22n 22n 22n 22n 22n 22n 22n 22n 22		PAGE 4 OF 40	IN	IC408 IC409 IC409 IC440 IC440 IC440 IC440 IC440 IC403 IC300 IC400 IC400 IC400 IC400 IC400 IC400 IC400 IC400 IC400 IC400 IC400	50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0	PART NO 5.0243 5.0243 5.0243 5.0243 5.0243 7.0027 7.002	VALUE NE5534 N NE5534N NE5534N NE5534N NE5534N NE5534N H0278PC H0278PC J0443 8C307b BC307b J442 J442 J442 QC307b	MC/40 MC/40 Or equi or equi MPF43 MPF43 Or equi	1 SPICATIONS/EQUIVALES 27-BCP 27-BCP 27-BCP Walent Walent 92 92 92 32 Walent	VY
_	C122 C122 C122 C122 C122 C122 C122 C122	59.26. 59.26. 59.34. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06.	0680 0680 0400 0224 0223 0226 0226 0226 0227 0228 0229	VALUE 68,µ A0 p 220,n 22 n 22 n 22 n 22 n 22 n 22 n 22 n 22		PAGE 4 OF 40	_	IC408 IC409 IC409 IC409 IC409 IC401 IC401 IC403 IC300 IC401 IC403 IC300 IC401	50.0 50.0	7-ART NO 5-0243 5-0243 5-0243 5-0243 7-0027 7-00	VALUE NE5534 N NE5534 N NE5534 N NE5534 N NE5534 N NE5534 N H0278PC H0278PC L04/3 PC	MC/40 MC/40 or equ or equ MPF43 MPF43 MPF43 or equi	IFICATIONS/COUVALES 27-BCP 27-BCP Valent Valent 92-82 92 32 Valent Valent Valent	VY
_	C132 C132 C122 C122 C122 C122 C122 C132 C13	59.26. 59.26. 59.27. 59.22. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06.	0680 0680 0400 0224 0223 0224 0680 0796	VALUE 68,µ A0p 220,µ 22n 22n 22n 22n 22n 22n 22n 22n 22n 22		PAGE 4 OF 40	IN	IC408 IC409 IC409 IC440 IC440 IC440 IC440 IC440 IC403 IC300 IC400 IC400 IC400 IC400 IC400 IC400 IC400 IC400 IC400 IC400 IC400	50.0 50.0	PART NO 5.0243 5.0243 5.0243 5.0243 5.0243 7.0027 7.002	VALUE NE5534 N NE5534N NE5534N NE5534N NE5534N NE5534N H0278PC H0278PC J0443 8C307b BC307b J442 J442 J442 QC307b	MC/40 MC/40 Or equi or equi MPF43 MPF43 Or equi	IFICATIONS/COUVALES 27-BCP 27-BCP Valent Valent 92-82 92 32 Valent Valent Valent	VY
_	C42** C42** C42** C42** C42** C42** C42** C42** C42** C42** C42** C42** C42** C42** C43**	59.26. 59.26. 59.27. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.26. 59.26. 59.34. 59.26. 59.34.	06 80 14 00 2224 0223 0266 0660 0766	22n 22n 22n 22n 22n 22n 22n 22n 24n 25n 268 468 468 468 468 468 468 468 468 468 4		PAGE 4 OF 40	IN	D POS NO ICA09 ICA09 ICA09 ICA01 ICA01 ICA01 IC30 IC30 IC30 IC30 IC30 IC30 IC30 IC30	50.0 50.0	PART NO 5.02,43 5.02,43 5.02,43 5.02,43 7.002,7 7.0	VALUE NE5534 N NE5534 N NE5534 N NE5534 N NE5534 N NE5534 N H0278PC H0278PC L04/3 PC	MC/40 MC/40 Or equi or equi MPF43 MPF43 MPF43 Or equi MPF443	1 IFICATIONE/FOURVALES 27 BCP 27 BCP 27 BCP 20 Interest 22 B2 23 B2 20 Interest 20 Interes	VY
_	DIFUND C122 C122 C122 C122 C123 C132 C132 C132	59.26. 59.24. 59.22. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.26. 59.26. 59.26. 59.26. 59.26. 59.26.	RT NO 0680 4400 2224 0223 0223 0223 0223 0223 022	VALUE 68,41 A0 p 220,42 22 n 22 n 22 n 22 n 22 n 22 n 48,41 48,41 68,41		PAGE 4 OF 40	IN	CAM2 CAM2	50.0 50.0	7.0027 7.	VALUE NE5534 N N NE5534 N N N N N N N N N N N N N N N N N N N	MC/40 MC/40 Or equi or equi MPF43 MPF43 MPF43 MPF43 MPF43 MPF43 MPF43	IFICATIONE/ROUPVALEP 27 BCP 27 BCP valent valent 492 32 32 valent valent 32 32 32	VY
_	DIFFUSION CASES CA	59.26. 59.26. 59.26. 59.26. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.26. 59.26. 59.26. 59.26. 59.26. 59.26. 59.26. 59.26.	0680 4400 2224 0223 0223 0223 0223 0223 0223 0223 0223 0223 0223 0680 2220 0680 9409 0680 0682 9409 0680	VALUE 68,44 A0 p 220,42 22 n 22 n 22 n 22 n 22 n 22 n 22 n 4,44 68,4 22 p 68,4 68,4 68,4 68,4 68,4		PAGE 4 OF 40	IN	CA102 CA10	50.0 50.0	PART NO 5.0243 5.0243 5.0243 5.0243 7.0027 7.0027 43 = K403 3.0545 3.0545 3.0350 3.0350 3.0355 3.0356 3.0350 3.0350 3.0350 3.0350 3.0350 3.0350 3.0350	VALUE NE5534 N N NE5534 N N NE5534 N N N N N N N N N N N N N N N N N N N	MC/440 MC/440 MC/440 or equ or equ MPF43 MPF43 MPF43 MPF43 MPF43	I IFECAMORETOURALE INFECAMORETOURALE INFECAMORET	VY
_	DIFUID DIPOS IN TUBE C4223 C424 C425 C426 C426 C426 C426 C426 C426 C436 C436 C436 C436 C436 C436 C436 C43	59.26. 59.26. 59.26. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.26. 59.26. 59.26. 59.26. 59.26.	RT NO 06 80 06 80 06 80 02 22 4 02 23 02 23 02 23 02 23 02 23 02 23 02 23 06 80 06 80 06 80 06 80 06 80 06 80 06 80	VALUE 68 µ 10 p 220 µ 22 n 22 n 22 n 22 n 22 n 48 µ 68 n 1 µ 68 µ 68 n 68 n 68 µ 68 µ 68 µ 68 µ 68 µ 68 µ 68 µ 68 µ		PAGE 4 OF 40	IN	DP POS NO. 10CA02 1CA02	50.0 50.0	5.0243 5.0243 5.0243 5.0243 5.0243 7.0027 43 = 16.493 3.0545 3.0545 3.0550 3.0350 3.0350 3.0350 3.0350 3.0350 3.0350 3.0350	NALUE NE5534 N NE5534 N NE5534 N NE5534 N NE5534 N H-0276PC H-0276	MC/40 MC/40 or equi MPF43 MPF43 or equi MPF43 MPF43 MPF43 MPF43	I III CANONIFOCIONAL EN III CANONIFOCIONAL EN III CANONIFOCIONAL EN III CANONIFOCIO CANONIFOCIO CANONIFOCIO CANONIFOCIO CANONIFOCIO CANONIFOCIO CANONIFOCIO CANONIFOCIO CANONIFOCIO CANONIFOCIO CANONIFOCIO CANONIFOCIO CANO	VY
_	DITUIN DITUIN POS NO NO NO NO NO NO NO NO NO NO NO NO NO	59.26. 59.26. 59.26. 59.26. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.26.	RT NO 0680 4400 2224 0223 0223 0223 0223 0223 022	VALUE 68 ## 40 p 220 m 22 n 22 n 22 n 22 n 22 n 22 n 22 n 4 ## 68 ## 68 m 22 p 68 ##		PAGE 4 OF 40	IN	DP POS NO. 10.100 DP POS NO. 1	50.00 50.00	200 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	NAME NE5534 N N NE5534 N N NE5534 N N N N N N N N N N N N N N N N N N N	MC./440 MC./440 or equ or equ MPF43 MPF43 or equ Or equ MPF43 MPF43 MPF43 MPF43 MPF43 MPF43 MPF43 MPF43 MPF43	incanosatouvales 22 BCP 22 BCP 22 BCP water-t water-t water-t yater 23 2 24 2 25 2 27	VY
_	DITUINE DITUIN	59.26. 59.26. 59.26. 59.26. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.06. 59.26. 59.26. 59.26. 59.26. 59.26. 59.26. 59.26. 59.26. 59.26. 59.26. 59.26. 59.26. 59.26.	RT NO 0680 0680 0224 0223 0223 0223 0223 0223 0223 022	VALUE 68 JL 10 p 220 JL 22 n 22 n 22 n 22 n 22 n 22 n 68 JL 22 p 68 JL 22 p 68 JL 22 p 68 JL 22 p 68 JL 22 p 68 JL 22 p 68 JL 22 p 68 JL 22 p 68 JL 22 p 68 JL 22 p 68 JL 22 p 68 JL 22 p		PAGE 4 OF 40	IN	O POS NO. 10.100	50.00 50	30545 3,0350	NALUE NE5534 N NE5534 N NE5534 N NE5534 N NE5534 N H0278PC H0278PC LCM3 BC307 b BC307 b J442 J442 J442 J442 J442 J442 J442 J44	MC/40 MC/40 MC/40 Or equ or equ MPF43 MPF43 MPF43 MPF43 MPF43 MPF43 MPF43 MPF43 MPF43 MPF43 MPF43	III. III. CANONITOUIVALEN 27 SCP 27 SCP Wellent Wellent Wellent Wellent Wellent Wellent Wellent Wellent 22 22 22 22 22 22 22 22 22 22 22 22 22	WT
_	DITUID POS NO. 10. 10. 10. 10. 10. 10. 10. 10. 10. 10	592.6. 593.4. 593.4. 593.4. 593.6. 590.6.	MT NO 0680 04400 2224 0223 0223 0223 0223 0223 02	VALUE 68 µ A0 p 220 µ 22 n 22 n 22 n 22 n 22 n 22 n 4 µ 22 p 68 µ 68 µ 68 µ 68 µ 68 µ 68 µ 68 µ 68 µ		PAGE 4 OF 40	IN	0 POS NO	50.00 50.00	\$20243 \$50243 \$50243 \$50243 \$50243 \$50243 \$7.0027 \$1.0027 \$30545 \$30545 \$30350	NE5534 N NE5534N NE5534N NE5534N NE5534N NE5534N NE5534N HO276PC HO276PC LCM3 LCM3 LCM3 LCM3 LCM3 LCM3 LCM3 LCM	MC/440 MC/440 OF equipment of e	III III CANONETOUNALEN III CANONETOUNALEN III CANONETOUNALEN III CANONETOUNALEN III CANONETOUNALEN III CANONETOUNALEN III CANONETOUNALEN III CANONETOUNALEN III CANONETOUNALEN III CANONETOUNALEN III CANONETOUNALEN III CAN	VY
_	DITUINE DITUIN	10 MA	MT NO 00680 00680 00680 00680 002224 00223 00223 00223 00223 00223 00223 002680 00680 00680 00680 00680 00680	VALUE 68 JL 10 p 220 JL 22 n 22 n 22 n 22 n 22 n 22 n 68 JL 22 p 68 JL 22 p 68 JL 22 p 68 JL 22 p 68 JL 22 p 68 JL 22 p 68 JL 22 p 68 JL 22 p 68 JL 22 p 68 JL 22 p 68 JL 22 p 68 JL 22 p		PAGE 4 OF 40	IN	O POS NO. 10.100	50.00 50.00	FART NO 5.0243 5.0243 5.0243 5.0243 7.0027 7.0027 7.0027 7.0027 7.0027 7.0027 7.0023 3.0545 3.0350 3.0350 3.0350 3.0350 3.0350 3.0350 3.0350 3.0350 3.0350 3.0350 3.0350 3.0350 3.0350 3.0350 3.0350 3.0350	NALUE NE5534 N NE5534 N NE5534 N NE5534 N NE5534 N H0278PC H0278PC LCM3 BC307 b BC307 b J442 J442 J442 J442 J442 J442 J442 J44	MC/440 MC/440 MC/440 Or equi or equi MPF43 MPF43 MPF43 MPF43 MPF43 MPF43 MPF43 MPF43 MPF43 MPF43 MPF43 MPF43 MPF43 MPF43 MPF43 MPF43 MPF43	I III CANONITOUIVALEN III CANONITOUIVAN III CANONITOUIVALEN III CANONITOUIVAN II	WT
_	DITUIES DITUIE	10 MA (10 Ma)	MT NO 00680 00680 00680 00680 002224 00223 00223 00223 00223 00223 00223 002680 00680 00680 00680 00680 00680	VALUE 68 µ A0 p 220 µ 22 n 22 n 22 n 22 n 22 n 22 n 4 µ 22 p 68 µ 68 µ 68 µ 68 µ 68 µ 68 µ 68 µ 68 µ		PAGE 4 OF 40	IN	0 POS MAN 1 ICA02	50.00 50.00	\$20243 \$50243 \$50243 \$50243 \$50243 \$50243 \$7.0027 \$1.0027 \$30545 \$30545 \$30350	NE5534 N NE5534N NE5534N NE5534N NE5534N NE5534N NE5534N HO276PC HO276PC LCM3 LCM3 LCM3 LCM3 LCM3 LCM3 LCM3 LCM	MC/440 MC/440 OF equipment of e	I III CANONITOUIVALEN III CANONITOUIVAN III CANONITOUIVALEN III CANONITOUIVAN II	WT
_	DITUIN DI	D	## NO 0680 ## NO	VALUE 68, 40 p 220, 22n 22n 22n 22n 22n 22n 22n 22n 68, 4, 68, 68, 68, 68, 68, 68, 68, 68, 68, 68		PAGE 4 OF 40	IN	Q / 1 (CA) (CA) (CA) (CA) (CA) (CA) (CA) (CA)	50.00 50.00	7.0027 7.0027	VALUE NE5534 N NE5534N NE5534N NE5534N NE5534N H0278PC H0278PC LCA/3 EC307b J4/2 J4/2 J4/2 J4/2 J4/2 J4/2 J4/2 J4/2	MC/440 MC/440 MC/440 Or equi or equi MPF43 MPF43 MPF43 MPF43 MPF43 MPF43 MPF43 MPF43 MPF43 MPF43 MPF43 MPF43 MPF43 MPF43 MPF43 MPF43 MPF43	III III CANONETOUIVALE III III CANONETOUIVALE III III CANONETOUIVALE III CANONETOUIVALI III CANONETOUIVALI III CANONETOUIVALI III CANONETOUIVALI III CANONETOUIVALI III CANONETOUIVALI III CANONETOUIVALI III CANONETOUIVALI III CANONETOUIVALI III CANONETOUIVALI III CANONETOUIVALI III CANONETOUIVALI III CANONETOUIVA III CANONETOUIVA III CANONETOUIVA III CANONETOUIVA III CANONETOUIVA III CANONETOUIVA III CANONETOUIVA III CANONETOUIVA III CANONETOUIVA III CANONETOUIVA III CANONETOUIVA III CANONETOUIVA III CANONETOUIVA III CANONETOUIVA III CANONETOUIVA III CANONETOUIVA III CANONETOUIVA III CANONETOUIVA	WT
_	DIVIDION NO. 10 POS NO	59.26. 59.26.	mt No 06880 44400 22224 02223 02223 02223 02223 02223 02223 02223 02223 02223 02223 02223 0223 0223 0223 0223 0223 0223 0223 0223 0680 0680 0680 0680 0680 0680 0680 068	VALUE 68,44 10 p 220n 22n 22n 22n 22n 22n 22n 68,44 68,68 68,68 68,68 68,46 68		PAGE 4 OF 40	IN	0 POS MA ICA08 ICA08 ICA06 ICA04 ICA	50.00 50.00	50243 50243 50243 50243 50243 50243 70027 70027 70027 70027 730545 30545 30556 30550 3	VALUE NESS3H N NESS3H N NESS3H N NESS3H N NESS3H N NESS3H N NESS3H N NESS3H N NESS3H N NESS3H N H-0278FC LCM3 BC307b BC307b J442 J442 J442 J442 J442 J442 J442 J44	MC/400 MC/40 OF equ MF 43 MF 43 MF 43 MF 43 MF 43 MF 43 MF 43 MF 43 MF 44	I I I I I I I I I I I I I I I I I I I	WT
_	DIVUIDID TO SMITH TO	Section Sect	at to 0 06 80 0 14 100 0 100 100 100 100 100 100 100	VALUE 68, 4 A0 p 220 22n 22n 22n 22n 22n 22n 22n 22n 22n		PAGE 4 OF 40	IN	D POS NO. 11CA920 11CA	50.00 50.00	\$5,0243 \$5,0243 \$5,0243 \$5,0243 \$5,0243 \$5,0243 \$5,0243 \$5,0243 \$7,0027 \$7,0027 \$3,0545 \$3,0545 \$3,0545 \$3,0350 \$3,	VALUE NE5534 N NE5534 N NE5534 N NE5534 N NE5534 N NE5534 N NE5534 N NE5534 N NE5534 N NE5534 N NE554 N N N N N N N N N N N N N N N N N N	MC/40 MC/40 MC/40 MC/40 MC/40 MF443 MF443 MF443 MF443 MF443 MFF443	III III CANONETOUNVALEN 27 SCP 27 SCP Valent Valent Valent Valent 92 92 92 93 93 94 95 97 97 97 97 97 97 97 97 97	WT
_	DIPOS NO NO NO NO NO NO NO NO NO NO NO NO NO	S206.534.4 S324.6 S324.6 S324.6 S326.6	mt No 10680 104400 10224 10223 10223 10223 10223 10223 10223 10223 10223 10223 10223 10223 10223 10223 10223 10223 10223 10220 1080 1080 1080 1080 1080 1080 108	VALUE 68, 44 A0 p 220, 422 n 22 n 22 n 22 n 22 n 22 n 22 n 22		PAGE 4 OF 40	IN	D POS NO. ICA020	3 5000 1 500 1 500 2 500 3 500 4 1 500 5 500	\$50243 \$50243 \$50243 \$50243 \$50243 \$50243 \$50243 \$50243 \$50243 \$50243 \$30545 \$30545 \$30545 \$30550	NES934 N N NES934 N N N N N N N N N N N N N N N N N N N	MC.440 MC	Incanosatourvales processor of the control of the	AT AT
_	DIPOS NO. 10 POS NO. 1	Section Sect	mt no 0 80 0 0 44 0 0 222 4 222 4 222 4 222 4 222 4	VALUE 68, 4 A0 p 220 22n 22n 22n 22n 22n 22n 22n 22n 22n		PAGE 4 OF 40	IN	D POS NO. ICA020 ICA02	50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0	\$50243 \$50243 \$50243 \$50243 \$50243 \$50243 \$50243 \$50243 \$50243 \$50243 \$30545 \$3054 \$30545 \$30545 \$30545 \$30545 \$30545 \$30545 \$30545 \$30545 \$30545 \$30545 \$30545 \$30545 \$30545 \$30545 \$3054 \$3054 \$30545 \$30545 \$3054 \$30545 \$3054 \$30545 \$30545 \$30545 \$30545 \$30545 \$30545 \$30545	VALUE NE5534 N NE5534 N NE5534 N NE5534 N NE5534 N NE5534 N NE5534 N NE5534 N NE5534 N NE5534 N NE554 N N N N N N N N N N N N N N N N N N	MC/40 MC/40 MC/40 MC/40 MC/40 MF443 MF443 MF443 MF443 MF443 MFF443	Incanosatourvales processor of the control of the	WT
INI	DIPOS NO. 20 POS NO. 2	S206.534.4 S324.6 S324.6 S324.6 S326.6	mt No 10680 104400 10224 10223 10223 10223 10223 10223 10223 10223 10223 10223 10223 10223 10223 10223 10223 10223 10223 10220 1080 1080 1080 1080 1080 1080 108	VALUE 68, 44 A0 p 220, 422 n 22 n 22 n 22 n 22 n 22 n 22 n 22		PAGE 4 OF 40	IN C	CA100 CA10	3 5000 1 500 1 500 2 500 3 500 4 1 500 5 500	\$50243 \$50243 \$50243 \$50243 \$50243 \$50243 \$50243 \$50243 \$50243 \$50243 \$30545 \$30545 \$30545 \$30550	NE593H N NES93H N N NES93H N N N N N N N N N N N N N N N N N N N	MC./40 MC	Incanosatourvales processor of the control of the	AT AT
IN	Pros No. Pros No.	Section Sect	mt no 0 80 0 0 44 0 0 222 4 222 4 222 4 222 4 222 4	VALUE 68, 44 A0 p 220, 422 n 22 n 22 n 22 n 22 n 22 n 22 n 22		PAGE 4 OF 40	[N]	CAMB CAMB	50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0	\$50243 \$50243 \$50243 \$50243 \$50243 \$50243 \$50243 \$50243 \$50243 \$50243 \$30545 \$3054 \$30545 \$30545 \$30545 \$30545 \$30545 \$30545 \$30545 \$30545 \$30545 \$30545 \$30545 \$30545 \$30545 \$30545 \$3054 \$3054 \$30545 \$30545 \$3054 \$30545 \$3054 \$30545 \$30545 \$30545 \$30545 \$30545 \$30545 \$30545	VALUE NE5534 N N NE5534 N N NE5534 N N NE5534 N N NE5534 N N NE5534 N N NE5534 N N NE5534 N N NE5534 N N NE5534 N N N N N N N N N N N N N N N N N N N	MC.440 MC	Incanosatourvales processor of the control of the	AT AT
INI	Pros No. Pros No.	Section Sect	mt no 0 80 0 0 44 0 0 222 4 222 4 222 4 222 4 222 4	VALUE 68, 44 A0 p 220, 422 n 22 n 22 n 22 n 22 n 22 n 22 n 22		PAGE 4 OF 40	[N]	CA100 CA10	50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0	\$50243 \$50243 \$50243 \$50243 \$50243 \$50243 \$50243 \$50243 \$50243 \$50243 \$30545 \$3054 \$30545 \$30545 \$30545 \$30545 \$30545 \$30545 \$30545 \$30545 \$30545 \$30545 \$30545 \$30545 \$30545 \$30545 \$3054 \$3054 \$30545 \$30545 \$3054 \$30545 \$3054 \$30545 \$30545 \$30545 \$30545 \$30545 \$30545 \$30545	VALUE NE5534 N N NE5534 N N NE5534 N N NE5534 N N NE5534 N N NE5534 N N N N N N N N N N N N N N N N N N N	MC./40 MC	I III CANONIFOGUIVALE III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III	AT AT
	DI POS IN MEDICAL POS	S20-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	#T NO 06 80 0 14 100 0 100 100 100 100 100 100 100	VALUE 68, 44 A0 p 220, 422 n 22 n 22 n 22 n 22 n 22 n 22 n 22		PAGE 4 OF 40	IN	Q.10 POS NO. 11.10	Social Section Soci	NAT NO 50243 50245 50245 50245 50245 50245 50245 50245 50245 50245 50245	VALUE NE5534N NE5534N NE5534N NE5534N N N NE5534N N NE5534N N NE5534N H-0276PC LCM3 RC307b BC307b BC307b J442 J442 J442 J442 J442 J442 J442 J442	MCA40 MCA4C OF equ or equ MPP43 MPP43 MPP43 MPP43 MPP43 MPP43 MPP43 MPP43 MPP43 MPP43 MPP43 MPP43 MPP43 MPP43 MPP44 MP44 MPP44 MP44 MPP44 MPP44 MPP44 MPP44 MPP44 MPP44 MPP44 MPP44 MPP4	I III CANONIFOGUIVALE III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III	AT AT
	5 TO OTTO TO THE TOTAL TO THE T	Section Sect	AT NO DO 80 A100 DO 80 A100 DO 80 A100 DO 80 A100 DO 80 A100 DO 80 A100 DO 80	VALUE 68, 44 A0 p 220, 422 n 22 n 22 n 22 n 22 n 22 n 22 n 22		PAGE 4 OF 40	IN	CAMB CAMB	Solution Solution	PART NO 5-0243 50-243 5	VALUE NE5534N NE5534N NE5534N NE5534N N N NE5534N N NE5534N N NE5534N H-0276PC LCM3 RC307b BC307b BC307b J442 J442 J442 J442 J442 J442 J442 J442	MC./40 MC./4C MC	I III CANONIFOGUIVALE III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III	AT AT
	POS NO. POS	S92.6. S93.4. S	at No 0680 4400 4400 62224 6223 6223 6223 6223 6223 6223 622	VALUE 68, 44 A0 p 220, 422 n 22 n 22 n 22 n 22 n 22 n 22 n 22		PAGE 4 OF 40	IN COLUMN	D POS NA	Solution Solution	2014 1	VALUE NE5534N NE5534N NE5534N NE5534N N N NE5534N N NE5534N N NE5534N H-0276PC LCM3 RC307b BC307b BC307b J442 J442 J442 J442 J442 J442 J442 J442	MC./40 MC./4C MC	I III CANONIFOGUIVALE III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III	AT AT
	POS NO. POS	Section Sect	AT NO DO 80 A100 DO 80 A100 DO 80 A100 DO 80 A100 DO 80 A100 DO 80 A100 DO 80	VALUE 68, 44 A0 p 220, 422 n 22 n 22 n 22 n 22 n 22 n 22 n 22		PAGE 4 OF 40	IN COLUMN	D POS NA	Solution Solution	PART NO 5-0243 50-243 5	VALUE NE5534N NE5534N NE5534N NE5534N N N NE5534N N NE5534N N NE5534N H-0276PC LCM3 RC307b BC307b BC307b J442 J442 J442 J442 J442 J442 J442 J442	MC./40 MC./4C MC	I III CANONIFOGUIVALE III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III CANONIFOGUIVALI III	

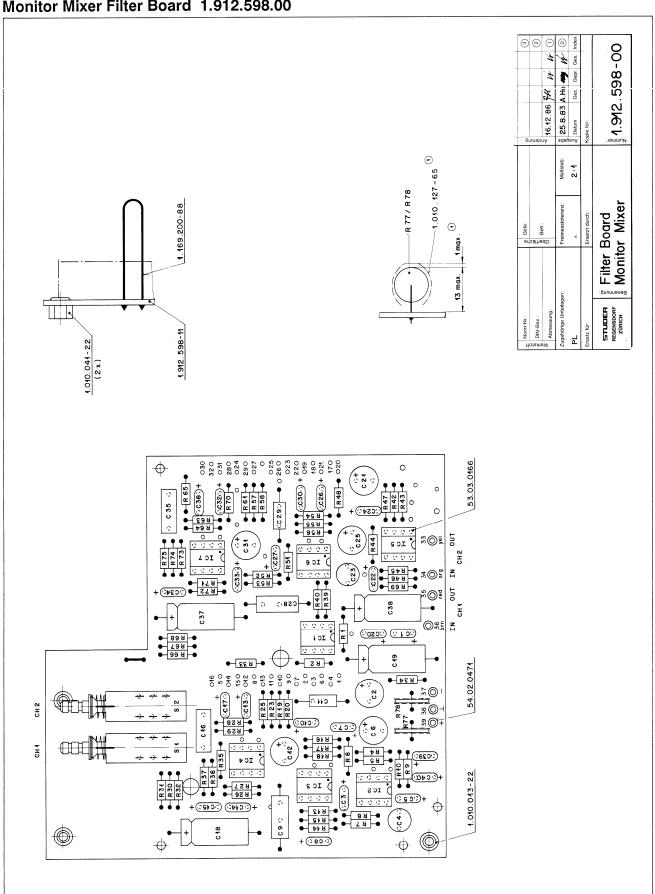
POS NO	PART NO	VALUE		CIFICATIONS/EQUIVALENT	MFR		POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
Q120	50.03.0350	J1112	MPF43	92				57.44.4472	4,7 k		
Q121	50.03,0350	J442	MPF439		4-4			57,44.4333	33k		
Q/22	50.03,0350	J442	MPF43					57.44.4223	22k 680k		
Q123	50.03.0545	BC/1076	orequ	ivalent			R137 R138	57.11.4694 57.11.4391	390		
+						\rightarrow	R439	57,44.4683	68k		
R/I	57.99.02.09	5,6	PTC	T	1		R440	57.44.3392	3,9k		
R2	57.99.02.09	56	PTC				R144	57.44.3392	3,9k		
R3	57,99.02.09	5,6	PTC	> Philips			R/42	57.44.46 83	68 k		
R4	57.99.02.09	5,6	PTC	2322.662.94005			R443	57.44.3224	220	1%	
R5	57.99.02.09	5,6	PTC				R144	57.44.322.4	220	1%	
R6	57.99.02.06	50		Philips 2.322.661.91002			R/45	4.942.004.25	5k	Potm. volume	
R7	57.44.4453	45k					R146	57,44.3224	220		
R8	57.44.4823	82k				Ш	R447	57.11.4683	68k		
R9	57.44.4683	68k				Ш	R/148	57.44.4332	3,3k		_
R40	57.11.4154	/50k						57,44,3152	1,5k		
R11	57.44.4105	/M			-	\vdash	R450	57.44.4683	40H		
R12	57.44.4405	/M				Н	R454	57.11.6106			
R43	57.44.4684	690k			+	ΙН	R452	57.44.6406 57.44.6406	HON MON		
R44 R45	57,44.4334 57,44,4474	330k 470			+-		R153 R154	57.44.6406	4014		
R16	57.44.447.4	470			_	IН		57.44.6406	40M		
R17	57.44.447.4	470			+	ıH		57.44.6406	40M		
R48	57.44.4474	470					R157	57.44.6406	A0M		
R 49	57,44,4474	470					R458	57.44.6406	40M		
1							R459	57.44.3392	3,9 k		
1							R160	57.44.3392	3,9 k		
R404	57,44,3452	45 k	1%				R161	57.44.3224	220		
R402	57.44.3452	45 k	1%				R162	57.44.3224	220		
R103	57.44.3392	3,9 k	1%			╵┖	R463	57.11.4683	68k		
18-	1-83 niy	DP MIX	Ep I.	1 4942540	= 5 n= /^		21-42 48-4	-83 Wy	OR MIX	(FR PI 4942540	PAGE 7 OF
) 18 STU	M-83 May DEER MONIT	DR MIX			€ 5 OF 40	9	18-1 5TUE	-83 Avy DER MONIT	OR MIX		PAGE 7 OF
2 18 -	M-83 AUG DEER MONIT	VALUE	SP	PL 1942.510 PAG	E 5 OF 40	9	18-1	-83 My DER MONIT	OR MIX	CER PL 4.942.540	
218- STU	M-83 MUY DER MONIT	VALUE 3,9 k				9	18-1 5TUE	-83 My DER MONIT PART NO 57.44.6406	VALUE		
2 18 -	M-83 My DER MONIT PART NO 1 57.44.3392 57.44.4222	VALUE	SP	ECIFICATIONS/EQUIVALENT		9	18-1 STUIC POS NO R164	-83 My DER MONIT	VALUE 10M		
STUD STUD R404 R405	M-83 MW MONIT	2,2k	1%	ECIFICATIONS/EQUIVALENT		9	A8-A STUID POS NO RA64 RA65	-83 Wy DER MONIT PART NO 57.44.6406 57.44.6406	AOM AOM		
218 SSTUII NO POS NO R404 R405 R406	M-93 MAY DEER MONIT P PART NO 57.44.5392 57.44.3392 57.44.3392	2,2k 3,9k 2,2k 3,9k	/% //%	ECIFICATIONS/EQUIVALENT * † † *		9	18-1 5TUE POS NO R164 R165 R166	-83 My PART NO 57.44.6406 57.44.6406 57.44.4623	### VALUE ####################################		
210 18- 210 210 210 210 210 210 210 210 210 210	A-83 MAY DEER MONIT PART NO 1 57.41.5392 57.41.3392 57.41.4392 57.41.4682	2,9 k 2,2k 3,9 k 3,9 k 3,9 k	/% //%	ECIFICATIONS/EQUIVALENT * † †		9	18-1 5TUD POS NO R164 R165 R166 R167	PART NO 57.44.6406 57.44.6406 57.44.4683 57.44.4823 57.44.4405	VALUE //OM		
718- 51700 8109 8109 8109 8109 8109 8109 8109	A-83 MAP DEER MONIT 51.41.5392 57.44.4222 57.44.3392 57.44.4822 57.44.4862 57.44.4454	VALUE 3,9 k 2,2 k 3,9 k 3,9 k 8,2 k 48 k	1% 1%	# † † # # #		9	A8-A 5TUG POS NO RA64 RA65 RA66 RA67 RA68 RA69 RA70	-83 My DER MONIT PART NO 57.44.6406 57.44.4623 57.44.4823 57.44.4823 57.44.4405 57.44.4473	VALUE 10M 10M 68k 82k 82k 47k 47k		
18	A-83 MMP DEFR MONIT PART NO 1 57.41.3392 57.44.3392 57.44.3392 57.44.4822 57.44.4445 58.04.8502	3,9 k 2,2 k 3,9 k 3,9 k 3,9 k 8,2 k 48 k 450	/% //%	# † † # # #		9	A8-A 5TUG POS NO RA64 RA65 RA66 RA67 RA68 RA69 RA70	-83 My MONIT PART NO 57.41.6406 57.41.4683 57.41.4623 57.41.4623 57.41.4623 57.41.4625 57.41.4454 57.41.4455	70M 70M 70M 68k 82k 82k 47k 77k 750k		
NO POS NO R404 R405 R406 R406 R408 R408 R409 R409 R440 R441 R441	A-83 AWA DEER MONIT DEER MONI	2,9 k 2,2k 3,9 k 3,9 k 3,9 k 8,2 k 68 k 450 5 k	1% 1%	# † † # # #		9	A8-A 5TUG POS NO RA64 RA65 RA66 RA67 RA68 RA69 RA70 RA74 RA72	-83 // MONIT PART NO 57.44.6406 57.44.4683 57.44.4823 57.44.4423 57.44.4423 57.44.4424 57.44.4454 57.44.4454 57.44.4454	VALUE //OM		
NO POS NO R409 R409 R409 R409 R409 R409 R409 R409	A-83 AWD DEER MONIT DEER MONI	VALUE 3,9 k 2,2k 3,9 k 3,9 k 8,2 k 68 k 450 5 k Ak 3,9 k	1% 1%	# † † # # #		9	#POS NO R/164 R/165 R/165 R/166 R/167 R/168 R/169 R/170 R/171 R/172 R/173	-83 // MONITO MO	VALUE //OM		
NO POS MO R409 R409 R409 R409 R409 R409 R409 R409	A-83 AGA DEER MONIT FAAT NO 1, 57.4A.73.92 57.4A.73.92 57.4A.73.92 57.4A.73.92 57.4A.73.92 57.4A.73.92 57.4A.73.92 57.4A.73.92 57.4A.95.92 57.4A.95.92 57.4A.95.92 57.4A.95.92 57.4A.95.92 57.4A.95.92 57.4A.95.92 57.4A.96	3,9 k 2,2 k 3,9 k 3,9 k 8,2 k 6,8 k 450 5 k 4 k 3,9 k	1% 1%	# † † # # #		9	#POS NO R/164 R/165 R/166 R/167 R/168 R/169 R/170 R/171 R/172 R/173 R/174	-83 // MONIT PART NO 57.44,6406 57.44,6406 57.44,463 57.44,4623 57.44,4402 57.44,4402 57.44,4423 57.44,4423 57.44,4423 57.44,4423 57.44,4423	### VALUE ####################################		
2404 2405 2406 2406 2406 2406 2406 2406 2406 2406	A-83 AWW DEER MONIT DEER MONIT THE PROPERTY OF THE PROPERTY	VALUE 3,9 k 2,2k 3,9 k 3,9 k 8,2 k 68 k 450 5 k Ak 3,9 k	1% 1%	# † † # # #		9	#POS NO R/164 R/165 R/165 R/166 R/167 R/168 R/169 R/170 R/171 R/172 R/173	-83 // MONITO MO	VALUE //OM		
NO POS MO R409 R409 R409 R409 R409 R409 R409 R409	A-83 AGE MONIT PAT NO 5 FA41.3392 57.44.3392 57.44.3392 57.44.3392 57.44.3392 57.44.3392 57.44.3392 57.44.3392 57.44.3392 57.44.450	VALUE 3,9 k 2,12k 3,9 k 3,9 k 8,2 k 6,8 k 450 5 k 4 k 3,9 k	1% 1%	# † † # # #		9	# 18-4 # 18-5 # 18-5 # 16-5 # 16-5 # 16-5 # 16-5 # 16-5 # 16-5 # 16-5 # 16-9 # 17-0 # 17-2 # 17-3 # 17-5	-83 My MONIT PART NO 57.44.6406 57.44.6406 57.44.6406 57.44.4623 57.44.4623 57.44.4625 57.44.4625 57.44.473 57.44.4745 57.44.475 57.44.4	### VALUE ####################################		PAGE 7 OF A
NO POS MA R404 R405 R406 R406 R408 R408 R408 R408 R408 R440 R440 R441 R441 R441 R441 R441 R441	A-83 AGG MONIT NAT NO T-7-4-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	3,9 k 2,2k 3,9 k 3,9 k 8,2 k 450 5 k 4 k 3,9 k 4 0 M	/% //% //% //% //% //* Tcim-	# † † # # #		9	18-11 50000 R164 R165 R166 R166 R167 R168 R170 R171 R172 R173 R174 R175 R176	-83 49/ MONIT PART 40 57.44.6406 57.44.6406 57.44.4683 57.44.4823 57.44.4423 57.44.4423 57.44.4423 57.44.4423 57.44.4423 57.44.4423 57.44.4423 57.44.4423 57.44.4423	### ##################################	SPECIFICATIONS/EQUIVALENT	
95 TUU0 R404 R405 R405 R406 R406 R406 R408 R409 R409 R409 R409 R409 R409 R409 R409	A-83 A99- BBBB MONIT ANT NO 5 ANT NO 5 FAA4392 57.44.392 57.44.392 57.44.454 58.01550 57.44.462 57.44.460 57.44.460 57.44.460 57.44.460 57.44.460 57.44.460 57.44.460 57.44.460 57.44.460 57.43.92 57.44.460 57.44.460 57.43.92 57.44.460 57.43.92 57.44.460 57.43.92 57.44.460 57.43.92 57.44.460 57.43.92 57.44.460	3,9 k 2,/2k 3,9 k 3,9 k 8,2 k 68 k 450 5 k 4 k 3,9 k 40 M 68 k 40 M 3,9 k 22 68 k	/% //% //% //% //% //* Tcim-	EGIFICATIONS/EQUIVALENT * † † * * * * * * * * * * * * * * * *		9	## 18 - 14 - 15 TUDG ## 1708 NO ## 1708	-83	### VALUE #### A0M ### 40M ##########		
NO POS MA 140-15 NO POS	A-83 A MAY AND AND AND AND AND AND AND AND AND AND	VALUE 3,9 k 2,12k 3,9 k 3,9 k 6,2 k 68 k 450 5 k 4 k 3,9 k 40 M 68 k 40 M 3,9 k 22 68 k 3,9 k	1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1	EGIFICATIONS/EQUIVALENT * † † * * * * * * * * * * * * * * * *		9	# POS NO R / 164 POS	-83	VALUE AOM AOM 68k 82k 82k 47k AFB AFB AFB AFB AFB AFB AFB AF	SPECIFICATIONS/EQUIVALENT	
D) 48 D) 48 D) 48 D) 48 D) 48 D) 48 D) 48 D) 55 T(U)(U)	A-83 assu- MONIT STAM,3392 57,44,4392 57,44,4392 57,44,4454 57,44,392 57,44,4454 57,44,4454 57,44,4454 57,44,4454 57,44,4545 57,44,466 57,44,3392 57,44,3392 57,44,3392 57,44,3392	VALUE 3,9 k 2,2k 3,9 k 3,9 k 8,2 k 48 k 450 5 k 48 k 40 M 68 k 40 M 3,9 k 22 68 k 3,9 k	1/8 1/8 1/8 1/8 1/6 1/6 1/6 1/6 1/6 1/6 1/6 1/6 1/6 1/6	EGIFICATIONS/EQUIVALENT * † † * * * * * * * * * * * * * * * *		9	# POS NO NO NO NO NO NO NO NO NO NO NO NO NO	-83	VALUE AOM AOM 68k 92k 92k 47k ASOk 92k 22k 680k 390 ASOk 450k 450k 40k 10s 40k 10s 33k	SPECIFICATIONS/EQUIVALENT	
D) 18	A-83 - 499- DEER MONIT 1 574.45392 574.45392 574.45392 574.45392 574.45392 574.45392 574.45392 574.45392 574.45392 574.4494 574.4494 574.4494 574.4494 574.4494 574.4494 574.4392 574.4392 574.4494 574.4392 574.4392 574.4392 574.4392 574.4392 574.4392 574.4392 574.4392 574.4392 574.4392	VALUE 3,9 k 2,12k 3,9 k 3,9 k 3,9 k 450 5k 450 5k 40M 3,9 k 40M 3,9 k 22 68 k 3,9 k 3,9 k 3,9 k 3,9 k 3,9 k 3,9 k 3,9 k 3,9 k 3,9 k 3,9 k 3,9 k 3,9 k	7% A% A% A% A% A% A% A%	EGIFICATIONS/EQUIVALENT * † † * * * * * * * * * * * * * * * *		9	# 1 POS NO NO NO NO NO NO NO NO NO NO NO NO NO	-83 // / / / / / / / / / / / / / / / / /	VALUE AOM 40M 68k 52k 52k 47h 47h A50k 52k 580k 590 A50k 450k	SPECIFICATIONS/EQUIVALENT	
D) 18 SSTUUI 10 POS NA 18 -	A-83 A99 STAM-822	VALUE 3,9 k 2,72k 3,9 k 8,2 k 8,2 k 48 k 450 5 k 40 M 68 k 40 M 3,9 k 22 68 k 3,9 k 220 3,9 k	1/8 1/8 1/8 1/8 1/6 1/6 1/6 1/6 1/6 1/6 1/6 1/6 1/6 1/6	EGIFICATIONS/EQUIVALENT * † † * * * * * * * * * * * * * * * *		9	## 105 NO NO NO NO NO NO NO NO NO NO NO NO NO	-83	VALUE 40M 40M 68k 92k 92k 47k 450k 620k 390 450k 450k 40k - Log 40k + Log 33k 33k 33k	SPECIFICATIONS/EQUIVALENT	
D) 18 SSTUUII D) 18	A-83 - 469- DEER MONIT STA1,392 STA4,392 STA4,392 STA4,454 STA4,456 STA4,4454 STA4,446 STA4	VALUE 3,9 k 2,7 k 3,9 k 2,7 k 3,9 k 4,9 k 4,5 0 5 k 7 k 4,0 M 68 k 7,0 M 68 k 7,0 M 68 k 7,0 M 7	7% A% A% A% A% A% A% A%	EGIFICATIONS/EQUIVALENT * † † * * * * * * * * * * * * * * * *		9	48-44 R464 R465 R464 R466 R466 R466 R470 R474 R475 R478 R478 R478 R478 R478 R478 R478 R478	- 83	VALUE AOM AOM 68k 82k 82k AM 47k A50k 82k 22k 680k 450k SPECIFICATIONS/EQUIVALENT		
D) 18 SSTUUID NO POS NA POS	A-83 AGE MONIT STAALS92 57.AA.4222 57.AA.4332 57.AA.4453 57.AA.4456 57.AA.4466 57.AA.4392 57.AA.4466 57.AA.4392 57.AA.4466 57.AA.392 57.AA.4662 57.AA.4663 57.AA.392 57.AA.392 57.AA.392 57.AA.392 57.AA.392 57.AA.392 57.AA.392	VALUE 3,9 k 2,72k 3,9 k 8,2 k 6,8 k 450 5 k 40 M 68 k 40 M 3,9 k 22 68 k 3,9 k 220 68 k 3,9 k	7% A% A% A% A% A% A% A%	EGIFICATIONS/EQUIVALENT * † † * * * * * * * * * * * * * * * *		9	## A6 - A	-83	VALUE 40M 40M 68k 92k 42k 47k 450k 82k 450k 450k 460k 460k 460k 480k	SPECIFICATIONS/EQUIVALENT	
D 16 - CS MAN 10 POS M	A-83 - 469- DEER MONIT STA1,392 STA4,392 STA4,392 STA4,454 STA4,456 STA4,4454 STA4,446 STA4,446 STA4,446 STA4,446 STA4,446 STA4,446 STA4,446 STA4,446 STA4,446 STA4,446 STA4,446 STA4,446 STA4,446 STA4,446 STA4,446 STA4,446 STA4,422 STA4,422 STA4,422 STA4,422 STA4,422 STA4,4392 STA4,392 STA4,	VALUE 3,9 k 2,7 k 3,9 k 3,9 k 4,0 k 4,0 k 3,9 k 4,0 M 4,0 M 3,9 k 4,0 M 2,2 k 6,0 k 2,2 k 6,0 k 3,9 k 4,0 M 3,9 k 4,0 M 3,9 k 4,0 M 3,9 k 4,0 M 3,9 k 4,0 M 3,9 k 4,0 M 3,9 k 4,0 M 3,9 k 4,0 M 3,9 k 4,0 M 3,9 k 4,0 M 3,9 k 4,0 M 3,9 k 4,0 M 3,9 k 4,0 M 3,9 k 4,0 M 3,9 k 4,0 M 3,9 k 4,0 M	7% A% A% A% A% A% A% A%	EGIFICATIONS/EQUIVALENT * † † * * * * * * * * * * * * * * * *		9	## A B - A B	- 83	VALUE ### ### ### ### ### ### ### ### ### #	SPECIFICATIONS/FOUTVALENT Potum.	
D 18 D	A-83 A MAY AND AND AND AND AND AND AND AND AND AND	VALUE 3,9 k 2,7 k 3,9 k 4,2 k 6,8 k 7,5 k 7,6 k 7,9 k	7% A% A% A% A% A% A% A%	EGIFICATIONS/EQUIVALENT * † † * * * * * * * * * * * * * * * *		9	## POS NO ## POS	-83 // My MONIT PART NO FART N	### ADM ### ADM ### ADM ### ADM ### ADM ### ADM ### ADD ### AD	Poten.	
D 18 - STUDIO 18 -	A-83 - 469- DEER MONIT 514.41392 57.44.4392 57.44.454 57.44.454 57.44.454 57.44.454 57.44.454 57.44.454 57.44.454 57.44.454 57.44.454 57.44.454 57.44.454 57.44.456 57.44.392 57.44.395 57.45.395 57.46.395 57.	VALUE 3,9 k 2,7 k 3,9 k 3,9 k 4,0 k 4,0 k 3,9 k 4,0 M 4,0 M 3,9 k 4,0 M 2,2 k 6,0 k 2,2 k 6,0 k 3,9 k 4,0 M 3,9 k 4,0 M 3,9 k 4,0 M 3,9 k 4,0 M 3,9 k 4,0 M 3,9 k 4,0 M 3,9 k 4,0 M 3,9 k 4,0 M 3,9 k 4,0 M 3,9 k 4,0 M 3,9 k 4,0 M 3,9 k 4,0 M 3,9 k 4,0 M 3,9 k 4,0 M 3,9 k 4,0 M 3,9 k 4,0 M	7% A% A% A% A% A% A% A%	EGIFICATIONS/EQUIVALENT * † † * * * * * * * * * * * * * * * *		9	## A B - A B	-83	VALUE ### ### ### ### ### ### ### ### ### #	SPECIFICATIONS/FOUTVALENT Potum.	
D 18	A-83 A MAY AND A	VALUE 3.9 k 2./2k 3.9 k 3.9 k 8.2k 4.80 6.8 k 4.50 5.k 4.0 m 4.0 m 3.9 k 2.2 5.8 k 3.9 k 2.2 5.8 k 3.9 k 3.9 k 4.0 m 5.0 k 5.0	7% A% A% A% A% A% A% A%	EGIFICATIONS/EQUIVALENT * † † * * * * * * * * * * * * * * * *		9	48-44 ABTUDE AIPOS NO A	-83	### VALUE ### A/DM ##	Poten.	
D 18	1-83	VALUE 3,9 k 2,2k 3,9 k 3,9 k 4,2k 450 5 k 450 5 k 40 M 68 k 40 M 68 k 22 k 22 0 68 k 3,9 k 22 0 68 k 40 M 68 k 40 M 68 k 40 M 68 k 40 M 68 k 40 M 68 k 40 M 68 k 40 M 68 k 40 M 68 k 40 M 68 k	7% A% A% A% A% A% A% A%	EGIFICATIONS/EQUIVALENT * † † * * * * * * * * * * * * * * * *		9	48-44 \$\$\text{POS NO}\$ \$\$\text{R464}\$ \$\$\text{R465}\$ \$\$\text{R465}\$ \$\$\text{R464}\$ \$\$\text{R467}\$ \$\$\text{R468}\$ \$\$\text{R473}\$ \$\$\text{R472}\$ \$\$\text{R476}\$ \$\$\text{R480}\$ \$\$\text{R482}\$ \$\$\text{R482}\$ \$\$\text{R482}\$ \$\$\text{R483}\$ \$\$\text{R486}\$ \$\$\text{R486}\$ \$\$\text{R4869}\$ \$\$\text{R480}\$ \$\$\t	-83	### ADM ##########	Poten.	
D 18	A-83 A MAN AND AND AND AND AND AND AND AND AND A	VALUE 3,9 k 2,2k 3,9 k 4,2k 4,8 k 4,50 5 k 4,6 k 4,0 k 4,0 k 4,0 k 3,9 k 2,2 k 6,8 k 4,0 k 3,9 k 2,0 k 6,8 k 4,0 k 6,0 k	7% A% A% A% A% A% A% A%	EGIFICATIONS/EQUIVALENT * † † * * * * * * * * * * * * * * * *		9	48-41 POS NO POS	-83	### VALUE ### A/DM ##	Poten.	
D 18	1-83	VALUE 3,9 k 2,2k 3,9 k 3,9 k 4,2k 450 5 k 450 5 k 40 M 68 k 40 M 68 k 22 k 22 0 68 k 3,9 k 22 0 68 k 40 M 68 k 40 M 68 k 40 M 68 k 40 M 68 k 40 M 68 k 40 M 68 k 40 M 68 k 40 M 68 k 40 M 68 k	7% A% A% A% A% A% A% A%	EGIFICATIONS/EQUIVALENT * † † * * * * * * * * * * * * * * * *		9	48-44 48-44 41-45 41	-83	### VALUE #### ADM #### #### ####################	Poten.	
No. Pos. No. No. Pos. No. Pos. No. Pos. No. Pos. No. Pos. No. Pos. No. Pos. Po	1-83	VALUE 3,9 k 2,2k 3,9 k 3,9 k 4,50 68 k 450 68 k 40 M 68 k 40 M 3,9 k 22 68 k 220 68 k 3,9 k 220 68 k 40 M 68 k 40 M 68 k 40 M 68 k 40 M 68 k 40 M 68 k 40 M 68 k 40 M 68 k 40 M 68 k 40 M 68 k 40 M 68 k 40 M 68 k 40 M 68 k 40 M 68 k 40 M 68 k 40 M 68 k 40 M 68 k 40 M 68 k	7% A% A% A% A% A% A% A%	EGIFICATIONS/EQUIVALENT * † † * * * * * * * * * * * * * * * *			48-44 \$TUUG R164 R164 R165 R164 R165 R166 R167 R168 R171 R172 R173 R174 R175 R176 R176 R176 R177 R178 R178 R178 R178 R178 R178 R178 R178 R180 R181	-83	### ACM ### AC	Poten.	
No No No No No No No No	1-83 - 469 MONIT STA1, 392 STA4, 39	3,9 k 2,2 k 3,9 k 4,0 k	7% A% A% A% A% A% A% A%	ECIFICATIONS/EQUIVALENT * † † * * * * * * * * * * * * * * * *			## A # A # A # A # A # A # A # A # A #	-83	### ACM ### AC	Poten.	
No Pos No Respondence (No Pos No Respondence (No Pos No Respondence (No Pos No Respondence (No Pos N	A-83 AGE MONIT STAM, S192	39 k 2,2k 3,9k 450 68 k 450 68 k 220 68 k 3,9k 400 68 k 400	18 A8 A8 A8 A8 A8 A8 A8 A8 A8 A8	EGIFICATIONS/EQUIVALENT * † † * * * * * * * * * * * * * * * *			## A 18 -	-83	### ACM ### AC	Poten.	
No. No.	A-83 A MAY NO IT TO THE PROPERTY OF THE PROPE	39 k 2,2k 3,9k 450 68 k 450 68 k 220 68 k 3,9k 400 68 k 400	4% 4% 4% 4% 4% 4% 4% 4% 4% 4% 4% 4% 4% 4	EGIFICATIONS/EQUIVALENT * † † * * * * * * * * * * * * * * * *			A8-A4 A8-A4 A64 R465 R464 R465 R464 R465 R469 R470 R470 R474 R472 R473 R474 R472 R473 R474 R474 R474 R474 R474 R474 R474	-B3	### ACM ### AC	Poten.	
No. No.	A-83 A MAN AND AND AND AND AND AND AND AND AND A	39 k 2,2k 3,9k 450 68 k 450 68 k 220 68 k 3,9k 400 68 k 400	4% 4% 4% 4% 4% 4% 4% 4% 4% 4% 4% 4% 4% 4	EGIFICATIONS/EQUIVALENT * † † * * * * * * * * * * * * * * * *			## A B - A B	-83	### ACM ### AC	Poten.	

Monitor Mixer 1.912.510/511

IND	POS NO		ART NO	VALUE	SPECII	FICATIONS/EQUIVALENT		MFF
	R/194	57.44	4103	10k				
	R195	57.4/	1.6406	MON				
	R196	57.4	1.6106	MON				
	R197	57.1/	1.4332	3,3k				
	R198	57.4	1.4332	3,3k				
	R199	57.4	1.4332	33k				
	R200	57.4	1.4332	33k				
	R201	57.1	1,4332	3,3k	1.912,511:	47k 57,11.4472		
	R202	57.N	1.4332	3,3k	1,912,511:	4,7k 57.11.4472		
	R203	1.9	12.004.35	10k -log	only 1.912	1540		
	R204	j		10k +log	only 1.91	2.540		
	R205	1.913	2.001.45	47k+Log,5				
	R206	4,947	2.001.45	4,7k+log, S				
	R207	1.91	2.001.45	47k+log,5				
	R208	1.912	2.001.45	4,7k+log, S				
	R209	57.1	1.4332	3,3k				
	R210	57.4	1.4332	3,3k				
	2211	57.4	1.4332	3,3k				
	R212	57,1	1.4683	68k				
	R213	57.1.	1.4683	68k				
	R214	57.1	1.4823	82k				
	R215	57.4	1.4823	82k				
	R216	57.4	1.4822	8 ₁ 2k				
	R217	57.1	1.4333	33k				
	R248	57.4	1.4224	220k				
	R219	57.4	1.4391	390				
	R220	57.4	1.4154	150k				
	R301.	R42	.0 = R101.	R220				
IND	DA'	TE	NAME	1				
4								
3								
2	4-10	5-84	gia .					
0	21-12	2-83	ny					
O	18-7	1-83	ry					
T.	STUE		MONIT	OR MIX	רם חו	1.312,510	PAGE 9	

	POS NO		PART NO	VALUE	SF	ECIFICATIO	NS/EQUIVALENT		MFR
	5101	55.45	5.0113		double	Latching			
	S402	55.45	5,0112		Latchin	g-non l	atching		
	5403	55.45	5.0112		Latchin	g-non la	itching		
	5/104				→ R20	5 (doubl	e Latching)		
	S405				→ R20	6 •			
	5106				- R20	7 .			
	S107				→ R20	8 .	•		
	5301.	5307	- SAOKS	107					
					 				
-	T/101,	T304	*	 					
		1.023	2.419		only tra	fo version	1		
_	XIC	53 A	3.0166	-	1C- cock	et DIL	O sine		
-	XIC		3,0168			et DIL			
-	A IC	33.0	5,0100		1C- 500	ec DIL	716 pins		
	A2	1.913	2,598,00		filter t	oard for	-1.912.511		
				ļ	ļ				
_				ļ	-				
				<u> </u>	<u> </u>				
				ļ	-				
	ļ			ļ					
	<u> </u>			ļ	-				
	L			ļ					
	<u> </u>			ļ	ļ				
	<u> </u>				ļ				
	<u> </u>			ļ	ļ				
	L			<u> </u>	J			1	
IND	DA	TE	NAME				-		
<u> </u>	_			4					
3			,	1912.5/	M : see d	also posit	ion list 1.912.	.598	
_	4-10		g _c	1					
0	21-1		Ny	1					
0	18-	1-83	ny	<u> </u>					
-	STUC	പട്ടത	MONIT	OR MIX	FR	PL 1.9	12540	PAGE -10	05

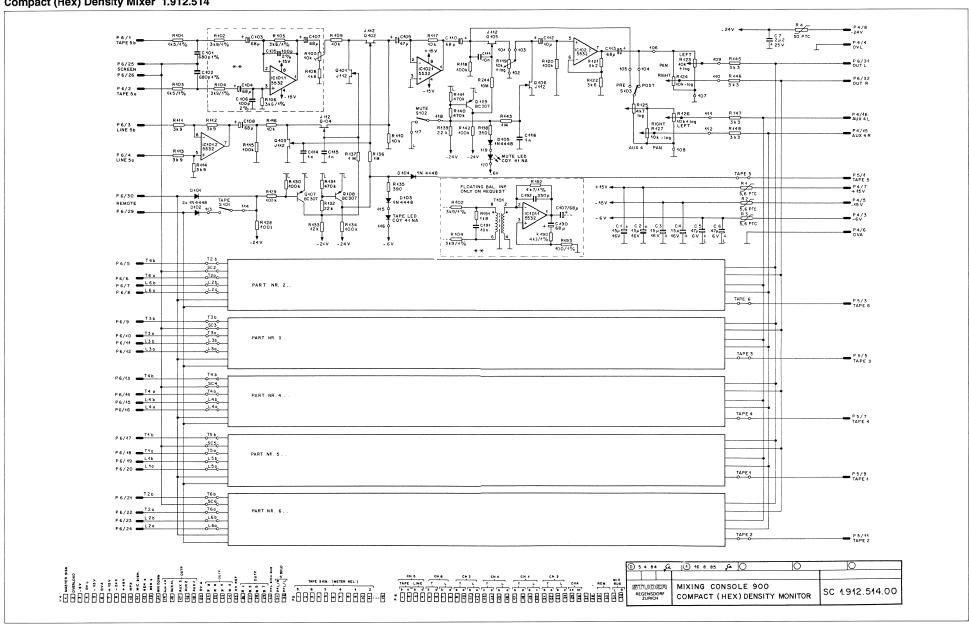
Monitor Mixer Filter Board 1.912.598.00

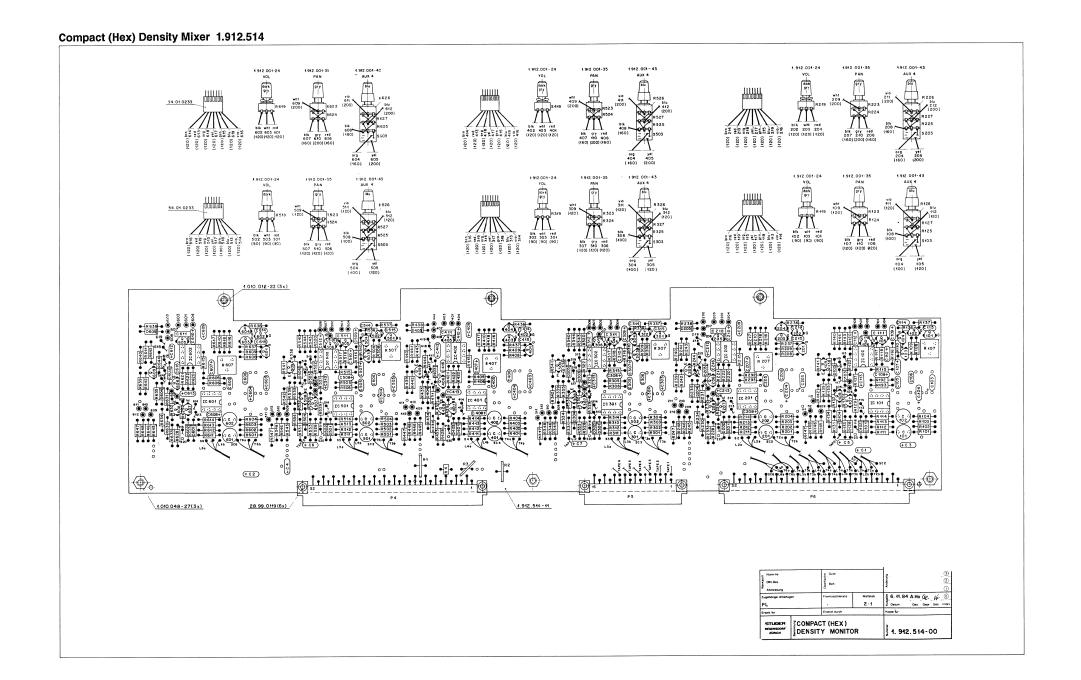


Monitor Mixer Filter Board 1.912.598.00

<u> </u>	POS NO		VALUE	SPECIFICATIONS/EQUIVALENT	MFR	INDIPO	E-0+11 Cars	PART NO	VALUE	SPECIFICATIONS/EQUIVA	LENT MF
	C1	59,26,0680	68ju	6V SAL	\perp		35	57.11.4684	680k		
	<u>C2</u>	59.22.2224	220ju	6V EL radial	1	R	36	57.11.4683	68k		
	C3	59,26,0680	68 ju	6V SAL		R	37	57.11.4472	4,7k		
	C4	59.05.1103	10n	1% PP		R	38	1,912,001.61	100k neg lag	potm.3	
	C5	59.26.0680	68 ju	6V SAL	T = T			57.11,4472	417 K		
	C6	59.22.2221	220m	6V EL radial				57.11.4472	4,7 k		
_	C7		1		+					made M	
		59.26.0680	68ju	6V SAL	+-			1.912.001.61	47K lin.	potm.4	
	C8	59.26.0680	68m	6V SAL		R	42	57,11,4472	4,7k		
	C 9	59.12.7123	12n	1% PS		R	43	57, 11, 4472	4,7 k		
	CAO	59.26,0680	68 ju	6V SAL	1 1	R	44	57,11.4682	6,8 k		
	cu	59.42.7482	1,8n	1% PS	Т			57,11.4682	6,8k		
	C12	59.22.2224	220m	6V EL radial			_				
_					+		_	57.11.41.83	18k		
	C43	59.26.0680	18 M	6V SAL	+-	R	47	57,11.4474	470k		
	C.14	59.26.0680	68ju	6V SAL		R	48	57.44.4392	3,9 k		
	C15	59.26.0680	68ju	6V SAL	\perp	R	49	1.912.001.61	100k neglogi	potm. 4	
	C16	59.44.3453	15n	5% PC 59.02.5453		R	50	1,912.001.62	47k Lin.	potm.5	
	CA	59.26.0680	68 ju	6V SAL				57.11.4222	2,2k		
	C18	59.25,4474	470m	6V EL axial				57.44,4483			
					1		-		18k		
-	C19	59.25.4474	470 ju	6V EL axial	+		53	57,11.4274	270k		
	C20	59.26.0680	68ju	6V SAL	\perp	R	54	57,11.4472	4,7 k		
	C21	59.22.2221	220m	6V EL radial	لـــــــــــــــــــــــــــــــــــــ	L R	55	57.11.4472	4,7 k		
	C22		68,u	6V SAL		_		57.11.4684	680k		
	C23	59.05,4103	10n	1% PP	T			57.11.4684	680k		
				6V SAL	+ - +						
-	C24		68m		+		58	57.44.4472	4,7k		
	C25		220ju	6V EL radial	+			1.912.001.62	100k meg, log	połm.5	
L	C26	59.26.0680	68ju	6V SAL	4		60	J	100k heg.log		
	C27	59.26.0680	68,u	6V SAL	لــــــــــــــــــــــــــــــــــــــ	R	61	57.44.4472	4,7k		1_
-	C28	59.12.7123	12n	1% PS				1,912.001.61	47k lin.	potm.6	
	C29	59.42.7482	1,8n	1% PS	\Box		63.	57.44.4472	4,7 k		
_	C30	59.26.0680	68m	6V SAL	\vdash			57.44.4472	4/7k		
-					1						
<u> </u>	C31	59.22.22.21	220m	6V EL radial				57.44.4683	68k		
<u> </u>	C32	59.26.0680	68ju	6V SAL	4	R	66	57,11.4472	4,7k		
	C33	59.26,0680	68ju	6V SAL		R	67	57.44,4683	68k		
	C34	59.26.0680	68ju	6V SAL		R	68	57.11.4220	22		
	C35	59,02.5453	15n	5% PC 59.44.3453		R	69	57.44.4683	68k	-	
	C36	59.26.0680	68,u	6V SAL				57.44.4682	6,8k		
-	C37		470m								
-		59,25,1471			++		71	57,11,4682	6,8k		
⊢	C38	59.25,1471	470ju	6V EL axial	+-			57.44.4483	18 k		
_	C39	59.26.2400	10 M	16V SAL		R	73	57.11.4684	680k		
	C40	59.26.2400	10 ju	16V SAL		R	74	57.44.4683	68 k		
								57.44.4472	4,7k		
	K1-7	50.09,0105	NE5532	dual op.amp	T			1.912.001.61	100k neg.log.	potm. 6	
⊢		53,03,0166	1	IC-socket 8pins							
		33,03,0700		TO SOURCE & PINS				57.99.0209	5,6	PTC) Philips	
<u> </u>	XIC				1 !						
	XIC				-	R	78	57.99.0209	5,6	PTC 2322,662.9.	1005
						R	78	57.99.0209	5,6	PTC 2322,662.9	1005
	R1	57.44.4472	4,7 k			R	78	57.99.0209	5,6	PTC 3322,662.9	1005
		57.44.4472 57.44.4472	4,7 k 4,7 k					57.99.02 <i>0</i> 9 55.45.0003	5,6	PTC 3322,642.9. Schadow	
	R1			potm, A					5,6		
	R1 R2 R3	57.11.4472 .1.912.001.61	4,7 k 4,7k lin	potm. 1					5,6		
	R1 R2 R3 R4	57.44.4472 , 4.342.004.64 57.44.4472	4,7 k 4,7k lin 4,7 k	potm. 1					5,6		
	R1 R2 R3 R4 R5	57.44.4472 .4.942.004.64 57.44.4472 57.44.4472	4,7 k 4,7k lin 4,7 k 4,7 k	potm. 1					5,6		
	R1 R2 R3 R4 R5	57.44.4472 . 4.942.004.64 57.44.4472 57.44.4472 57.44.4682	4,7 k 4,7k lin 4,7 k 4,7 k 6,8 k	potm. 1					5,6		
	R1 R2 R3 R4 R5 R6	57.44.4472 .4.942.004.64 57.44.4472 57.44.4472 57.44.4682 57.44,4682	4,7 k 4,7 k lin 4,7 k 4,7 k 6,8 k	potm. 1					5,6		
	R1 R2 R3 R4 R5 R6 R7	57.44.4472 .4.942.004.64 57.44.4472 57.44.4472 57.44.4682 57.44.4682 57.44.4483	4,7 k 4,7 k lin 4,7 k 4,7 k 6,8 k 6,8 k	potm. 1					5,6		
	R1 R2 R3 R4 R5 R6 R7 R8	57.44.4472 .4.942.004.64 57.44.4472 57.44.4472 57.44.4682 57.44.4682 57.44.4483 57.44.4483	4,7 k 4,7k lin 4,7 k 4,7 k 6,8 k 6,8 k 78 k	potm. 1					5,6		
	R1 R2 R3 R4 R5 R6 R7 R8	57.44.4472 .4.942.004.64 57.44.4472 57.44.4472 57.44.4682 57.44.4682 57.44.4483	4,7 k 4,7 k lin 4,7 k 4,7 k 6,8 k 6,8 k	potm. 1					5,6		
	R4 R2 R3 R4 R5 R6 R7 R8 R9	57.44.4472 .4.942.004.64 57.44.4472 57.44.4472 57.44.4682 57.44.4682 57.44.4483 57.44.4483	4,7 k 4,7k lin 4,7 k 4,7 k 6,8 k 6,8 k 78 k	potm. 1					5,6		
	R4 R2 R3 R4 R5 R6 R7 R8 R9 R40	57.44.4472 .4.342.004.64 57.44.4472 57.44.4472 57.44.4682 57.44.4483 57.44.4483 57.44.4483 4.942.004.64	4,7 k 4,7k lin 4,7 k 4,7 k 6,8 k 6,8 k 48 k 470 k 3,9 k 400k neglog.	potm. 1					5,6		
	R1 R2 R3 R4 R5 R6 R7 R8 R9 R40 R41	57.44.4472 .4.342.004.64 57.44.4472 57.44.4472 57.44.4682 57.44.4682 57.44.4483 57.44.4474 57.44.4392 4.342.004.64	4,7 k 4,7 k lin 4,7 k 4,7 k 6,8 k 6,8 k 48 k 470 k 3,9 k 400k neglog. 4,7 k lin						5,6		
	R1 R2 R3 R4 R5 R6 R7 R8 R9 R40 R41 R42 R43	57.44.4472 .4.342.004.64 57.44.4472 57.44.4462 57.44.4682 57.44.4683 57.44.4483 57.44.4392 4.342.004.64 4.342.004.64	4,7 k 4,7 k lin 4,7 k 4,7 k 6,8 k 6,8 k 48 k 470 k 3,9 k 400k neslog. 4,7 k lin 2,2 k	potm. 1					5,6		
	R1 R2 R3 R4 R5 R6 R7 R8 R9 R40 R41 R42 R43 R44	57.44.4472 .4.342.004.64 57.44.4472 57.44.4472 57.44.4682 57.44.4483 57.44.4483 57.44.4483 4.342.004.64 4.342.004.62 57.44.4483	4,7 k 4,7 k lin 4,7 k 4,7 k 4,7 k 6,8 k 6,8 k 48 k 470 k 3,9 k 400k neglog 4,7 k lin 2,2 k 18 k	potm. 1					5,6		
	R1 R2 R3 R4 R5 R6 R7 R8 R9 R40 R41 R42 R43 R44 R45	57.44.4472 .4.342.004.64 57.44.4472 57.44.44682 57.44.44682 57.44.4483 57.44.4483 57.44.4483 4.342.004.64 4.342.004.64 57.44.4483 57.44.4483 57.44.4483	4,7 k 4,7 k lin 4,7 k 4,7 k 4,7 k 4,7 k 6,8 k 6,8 k 48 k 470 k 3,9 k 400k neglog 4,7 k lin 2,2 k 18 k 270 k	potm. 1					5,6		
	R4 R2 R3 R4 R5 R6 R7 R8 R9 R40 R44 R42 R43 R44 R45 R46	57.44.4472 .4.342.004.64 57.44.4472 57.44.4482 57.44.4482 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4488 57.44.4488	4,7 k 4,7 k lin 4,7 k 6,8 k 6,8 k A8 k 470 k 3,9 k 400k neglog 4,7 k lin 2,2 k A8 k 270k 680 k	potm. 1					5,6		
	R4 R2 R3 R4 R5 R6 R7 R8 R9 R40 R44 R42 R43 R44 R45 R46	57.44.4472 .4.342.004.64 57.44.4472 57.44.44682 57.44.44682 57.44.4483 57.44.4483 57.44.4483 4.342.004.64 4.342.004.64 57.44.4483 57.44.4483 57.44.4483	4,7 k 4,7 k lin 4,7 k 4,7 k 4,7 k 4,7 k 6,8 k 6,8 k 48 k 470 k 3,9 k 400k neglog 4,7 k lin 2,2 k 18 k 270 k	potm. 1					5,6		
	R1 R2 R3 R4 R5 R6 R7 R8 R9 R40 R41 R42 R43 R44 R45 R46 R47	57.44.4472 .4.342.004.64 57.44.4472 57.44.4482 57.44.4482 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4488 57.44.4488	4,7 k 4,7 k lin 4,7 k 6,8 k 6,8 k A8 k 470 k 3,9 k 400k neglog 4,7 k lin 2,2 k A8 k 270k 680 k	potm. 1					5,6		
	R1 R2 R3 R4 R5 R6 R7 R8 R9 R40 R41 R42 R43 R44 R45 R45 R46	57.44.4472 .4.342.004.64 57.44.4472 57.44.44682 57.44.4682 57.44.4483 57.44.4474 57.44.4392 4.342.004.64 4.842.004.62 57.44.4483 57.44.4483 57.44.4484 57.44.4484 57.44.4684 57.44.4472	4,7 k 4,7 k tin 4,7 k 4,7 k 6,8 k 6,8 k 48 k 470 k 3,9 k 400k neglog 4,7 k tin 2,2 k 48 k 2,70k 680k 4,7 k 4,7 k	potm. 1					5,6		
	R1 R2 R3 R4 R5 R6 R7 R8 R10 R41 R42 R43 R44 R45 R46 R47 R48 R49	57.44.4472 .4.342.004.64 57.44.4472 57.44.4482 57.44.4482 57.44.4483 57.44.4483 57.44.4474 57.44.44392 .4.942.004.64 .4.942.004.64 .4.942.004.64 .5.74.4483 57.44.4684 57.44.4484 57.44.4484 57.44.4484 57.44.4484 57.44.4484	4,7 k 4,7 k 1,7 k 4,7 k 4,7 k 6,8 k 6,8 k 48 k 470 k 3,9 k 400k neglog 4,7 k lin 2,2 k 48 k 270k 680k 4,7 k 4,7 k 680k	potm. 1					5,6		
	R1 R2 R3 R4 R5 R6 R7 R8 R9 R40 R41 R42 R43 R44 R45 R46 R46 R46 R48 R48 R48 R48 R48 R48 R48 R48 R48 R48	57.44.4472 .4.342.004.64 57.44.4472 57.44.44682 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.422 57.44.422 57.44.4483 57.44.4472 57.44.4472 57.44.4472 57.44.4472	4,7 k 4,7 k lin 4,7 k 6,8 k 6,8 k 48 k 470 k 3,9 k 400k negLog. 4,7 k lin 2,2 k 48 k 270k 680 k 4,7 k 4,7 k 680 k 4,7 k 4,7 k	potm.4 potm 2					5,6		
	R1 R2 R3 R4 R5 R6 R7 R8 R9 R40 R41 R42 R43 R14 R45 R46 R47 R48 R48 R48 R48 R48 R48	57.44.4472 .4.342.004.64 57.44.4472 57.44.4482 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4488 57.44.4488 57.44.4488 57.44.4472 57.44.4488 57.44.4488 57.44.4472 57.44.4488	4,7 k 4,7 k lin 4,7 k 4,7 k 6,8 k 6,8 k A8 k 470 k 3,9 k 400k neglog 4,7 k lin 2,12 k A8 k 270k 680 k 4,7 k 4,7 k 680 k 4,7 k 4,7 k 680 k 4,7 k 400k neglog	potm. 1					5,6		
	R1 R2 R3 R4 R5 R6 R7 R8 R9 R40 R41 R42 R43 R44 R45 R46 R47 R48 R49 R20 R24 R22	57.44.4472 .4.942.004.64 57.44.4472 57.44.4682 57.44.4682 57.44.4483 57.44.4483 57.44.4492 .4.942.004.64 .4.942.004.62 57.44.4483 57.44.4483 57.44.4484 57.44.4472 57.44.4484 57.44.4472 57.44.4472 57.44.4484 57.44.4472	4,7 k 4,7 k lin 4,7 k 4,7 k 6,8 k 6,8 k 48 k 470 k 3,9 k 400k neglog 4,7 k lin 2,2 k 48 k 270k 680k 4,7 k 680k 4,7 k 600k neglog 400k neglog 400k neglog 400k neglog 400k neglog	potm.4 potm 2					5,6		
	R.1 R.2 R.3 R.4 R.5 R.6 R.7 R.8 R.9 R.40 R.41 R.42 R.43 R.44 R.45 R.46 R.47 R.48 R.49 R.49 R.40 R.40 R.41 R.40 R.41 R.41 R.42 R.43 R.44 R.45 R.40 R.40 R.40 R.40 R.40 R.40 R.40 R.40	57.44.4472 .4.342.004.64 57.44.4472 57.44.4682 57.44.4682 57.44.4483 57.44.4483 57.44.4474 57.44.44392 .4.942.004.64 .4.842.004.64 .4.842.004.62 57.44.4684 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4472	4,7 k 4,7 k 4,7 k 4,7 k 4,7 k 6,8 k 6,8 k 48 k 470 k 3,9 k 400k neg.log, 4,7 k lin 2,2 k 48 k 270k 680 k 4,7 k 4,7 k 4,7 k 400k neg.log, 4,7 k 400k neg.log, 4,7 k 400k neg.log, 4,7 k 400k neg.log, 4,7 k	potm.1 potm 2 potm.2					5,6		
	R.1 R.2 R.3 R.4 R.5 R.6 R.7 R.8 R.40 R.41 R.42 R.43 R.44 R.45 R.46 R.47 R.48 R.49 R.20 R.21 R.22 R.22 R.23 R.24	57.44.4472 .4.342.004.64 57.44.4472 57.44.4682 57.44.4682 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.42004.62 57.44.422 57.44.4483 57.44.4483 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4472	4,7 k 4,7 k 1,7 k 4,7 k 6,8 k 6,8 k 48 k 470 k 3,9 k 400k neglog 4,7 k lin 2,2 k 4,7 k lin 2,7 0k 680 k 4,7	potm.4 potm 2					5,6		
	R.1 R.2 R.3 R.4 R.5 R.6 R.7 R.8 R.40 R.41 R.42 R.43 R.44 R.45 R.46 R.47 R.48 R.49 R.20 R.21 R.22 R.22 R.23 R.24	57.44.4472 .4.342.004.64 57.44.4472 57.44.4682 57.44.4682 57.44.4483 57.44.4483 57.44.4474 57.44.44392 .4.942.004.64 .4.842.004.64 .4.842.004.62 57.44.4684 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4472	4,7 k 4,7 k 4,7 k 4,7 k 4,7 k 6,8 k 6,8 k 48 k 470 k 3,9 k 400k neg.log, 4,7 k lin 2,2 k 48 k 270k 680 k 4,7 k 4,7 k 4,7 k 400k neg.log, 4,7 k 400k neg.log, 4,7 k 400k neg.log, 4,7 k 400k neg.log, 4,7 k	potm.1 potm 2 potm.2					5,6		
	R1 R2 R2 R4 R5 R6 R7 R8 R9 R40 R41 R42 R45 R45 R46 R47 R48 R20 R24 R22 R23 R24 R22 R23	57.44.4472 .4.342.004.64 57.44.4472 57.44.4472 57.44.4482 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4484 57.44.4472 57.44.4472 57.44.4472 14.812.004.62 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4472	4,7 k 4,7 k 1,7 k 4,7 k 6,8 k 6,8 k 48 k 470 k 3,9 k 400k neglog 4,7 k lin 2,2 k 4,7 k lin 2,7 0k 680 k 4,7	potm.1 potm 2 potm.2					5,6		
	R1 R2 R2 R4 R5 R6 R7 R8 R8 R9 R40 R41 R42 R43 R44 R45 R46 R47 R48 R20 R21 R22 R23 R24 R22 R23 R24	57.44.4472 .4.342.004.64 57.44.4472 57.44.4682 57.44.4682 57.44.4483 57.44.44392 .4.942.004.64 .4.942.004.64 .4.942.004.62 57.44.4483 57.44.4483 57.44.4484 57.44.4472 57.44.4684 57.44.4472 .57.44.4684 57.44.4472 .9.42.004.62 .9.57.44.4684 .9.67.4684	4,7 k 4,7 k Lin 4,7 k 6,8 k 6,8 k A8 k 470 k 3,9 k 400k neglog: 4,7 k Lin 2,12 k A8 k 2,70k 680 k 4,7 k 4,7 k 680 k 4,7 k 4,7 k 680 k 4,7 k 4,7 k 680 k 4,7 k 4,7 k 680 k 4,7 k 4,7 k 680 k 4,7 k 680 k 4,7 k 4,7 k 680 k 4,7 k 680 k 4,7 k 680 k 4,7 k 680 k 4,7 k 680 k 4,7 k 680 k 4,7 k 680 k 4,7 k 680 k 4,7 k 680 k 4,7 k 680 k 4,7 k 680 k 4,7 k 680 k 4,7 k 680 k 4,7 k 680 k 4,7 k 680 k 4,7 k 680 k 4,7 k 680 k 4,7 k 680 k 4,7 k 680 k	potm.1 potm 2 potm.2		S.	1,1,2	55.45.0003	5,6		
	R4 R2 R3 R4 R5 R6 R7 R8 R9 R40 R41 R42 R43 R44 R45 R46 R20 R20 R21 R22 R23 R24 R25 R24 R27	57.44.4472 .4.342.004.64 57.44.4472 57.44.4682 57.44.4682 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4684 57.44.4684 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483	4,7 k 4,7 k 4,7 k 4,7 k 4,7 k 6,8 k 6,8 k 48 k 470 k 3,9 k 400k neg.log. 4,7 k lin 2,2 k 4,7 k lin 6,80 k 4,7 k 4,	potm.1 potm 2 potm.2		S.		55.45.0003	5,6		
	R4 R2 R3 R4 R5 R6 R7 R8 R9 R40 R41 R45 R42 R43 R44 R45 R24 R24 R22 R23 R24 R25 R26 R27 R27 R28	57.44.4472 .4.342.004.64 57.44.4472 57.44.44682 57.44.44682 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4484 57.44.4472 1.4342.004.64 57.44.4472 1.4342.004.64 57.44.4472 1.4342.004.64 57.44.4472 1.4342.004.64 57.44.4472 1.4342.004.64 57.44.4472 1.4342.004.64 57.44.4483 57.44.4483 57.44.4483 57.44.4483	4,7 k 4,7 k 4,7 k 4,7 k 4,7 k 6,8 k 6,8 k 48 k 470 k 3,9 k 400k neglog, 4,7 k lin 2,2 k 4,7 k 680k 4,7 k 4,7 k 4,00k neglog, 4,7 k 1,7 k 4,7 k 4,7 k 1,7 k lin 6,8 k 4,7 k 4,7 k 6,8 k 4,7 k	potm.1 potm 2 potm.2		S. S. S. S. S. S. S. S.	1,1,2	55.45.0003	5,6		
	R1 R2 R3 R4 R5 R6 R7 R8 R3 R40 R41 R42 R43 R45 R46 R47 R48 R20 R21 R22 R23 R24 R22 R23 R24 R25 R25 R25 R25 R25 R26 R27	57.44.4472 .4.342.004.64 57.44.4472 57.44.44682 57.44.44682 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4482 57.44.4482 57.44.4482 57.44.4482 57.44.4482 57.44.4483 57.44.4472 57.44.4483	4,7 k 4,7 k 1,7 k 4,7 k 6,8 k 6,8 k 48 k 470 k 3,9 k 400k neglog 4,7 k lin 2,2 k 4,7 k 680 k 4,7 k 4,7 k 680 k 4,7 k 4,7 k 6,8 k 4,7 k 4,7 k 1,7 k lin 6,8 k 6,8 k 4,7 k	potm.1 potm 2 potm.2		S. S. S. S. S. S. S. S.	1,1,2	55.45.0003	5,6		
	R4 R2 R3 R4 R5 R6 R7 R8 R9 R40 R41 R42 R43 R44 R45 R24 R22 R23 R24 R22 R23 R24 R25 R26 R27 R28 R26 R27 R28 R27 R28 R28 R29 R29 R29 R29 R29 R29 R29 R29 R29 R29	57.44.4472 .4.342.004.64 57.44.4472 57.44.4472 57.44.4482 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4472 57.44.4472 57.44.4472 57.44.4483 57.44.4472 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483	4,7 k 4,7 k 1,7 k 4,7 k 6,8 k 6,8 k 470 k 3,9 k 400k neglog 4,7 k 1in 2,2 k 48 k 270k 680 k 4,7 k 4,7 k 4,7 k 4,7 k 680 k 4,7 k 4,7 k 680 k 4,7 k 4,7 k 680 k 4,7 k	potm.1 potm 2 potm.2		S. S. S. S. S. S. S. S.	1,1,2	55.45.0003	5,6		
	R4 R2 R3 R4 R5 R6 R7 R8 R9 R40 R41 R42 R43 R44 R45 R24 R22 R23 R24 R22 R23 R24 R25 R26 R27 R28 R26 R27 R28 R27 R28 R28 R29 R29 R29 R29 R29 R29 R29 R29 R29 R29	57.44.4472 .4.342.004.64 57.44.4472 57.44.44682 57.44.44682 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4472 57.44.4482 57.44.4482 57.44.4482 57.44.4482 57.44.4482 57.44.4483 57.44.4472 57.44.4483	4,7 k 4,7 k 1,7 k 4,7 k 6,8 k 6,8 k 48 k 470 k 3,9 k 400k neglog 4,7 k lin 2,2 k 4,7 k 680 k 4,7 k 4,7 k 680 k 4,7 k 4,7 k 6,8 k 4,7 k 4,7 k 1,7 k lin 6,8 k 6,8 k 4,7 k	potm.1 potm 2 potm.2		S. S. S. S. S. S. S. S.	1,1,2	55.45.0003	5,6		
	R4 R2 R3 R4 R5 R6 R7 R8 R9 R40 R41 R42 R43 R44 R45 R20 R24 R24 R22 R23 R24 R24 R25 R24 R27 R28 R27 R28 R27 R28 R27 R28 R27 R28 R27 R28 R27 R28 R27 R28 R27 R27 R27 R27 R27 R27 R27 R27 R27 R27	57.44.4472 .4.342.004.64 57.44.4472 57.44.4472 57.44.4482 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4472 57.44.4472 57.44.4472 57.44.4483 57.44.4472 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483	4,7 k 4,7 k 1,7 k 4,7 k 6,8 k 6,8 k 470 k 3,9 k 400k neglog 4,7 k 1in 2,2 k 48 k 270k 680 k 4,7 k 4,7 k 4,7 k 4,7 k 680 k 4,7 k 4,7 k 680 k 4,7 k 4,7 k 680 k 4,7 k	potm.1 potm 2 potm.2		S. S. S. S. S. S. S. S.	DAT	55.45.0003	5,6		
	R1 R2 R3 R4 R5 R6 R7 R8 R9 R40 R41 R42 R45 R16 R47 R20 R24 R22 R25 R26 R27 R25 R26 R27 R27 R27 R28 R27 R28 R28 R28 R29 R29 R24 R25 R26 R27 R27 R27 R27 R27 R27 R27 R27 R27 R27	57.44.4472 .4.342.004.64 57.44.4472 57.44.44682 57.44.44682 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4484 57.44.4472 57.44.4472 57.44.4483 57.44.4483 57.44.4472 57.44.4483 57.44.4483 57.44.4472 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483 57.44.4483	4,7 k 4,7 k 4,7 k 4,7 k 4,7 k 4,7 k 6,8 k 6,8 k 470 k 3,9 k 400k neglog 4,7 k lin 2,2 k 4,7 k 4,7 k 4,7 k 4,7 k 4,7 k 4,7 k 4,7 k 4,7 k 4,7 k 1,	potm.1 potm 2 potm.2		S. S. S. S. S. S. S. S.	DAT	55.45.0003		Schadow	ITT

Compact (Hex) Density Mixer 1.912.514





SECTION 5

Compact (Hex) Density Mixer 1.912.514

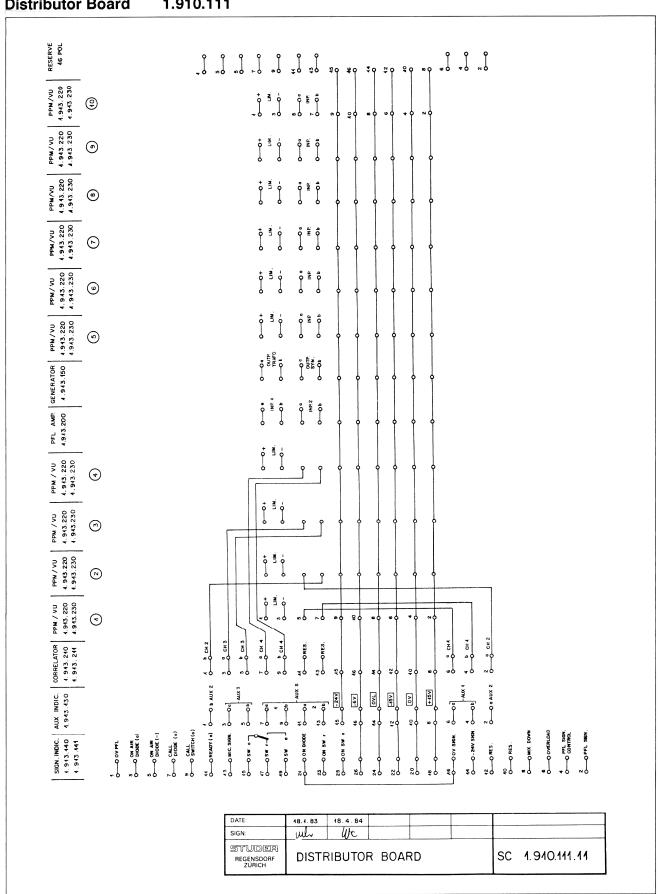
AdPOSREF.No	DESCRIPTIONMANUFACTURER	AdPOSREF.No DESCR	IPTIONMANUFACTURER	AdPOS	REF.No DESCR	RIPTION	MANUFACTURER	AdPOSREF.No	DESCRIPTION	MANUFACTURER
A 1 1.912.597.00 A 2 1.912.597.00 A 3 1.912.597.00 C 1 59.26.2150 C 2 59.26.2150 C 3 59.26.2150 C 3 59.26.2150 C 4 59.26.2150 C 5 59.26.0470 C 6 59.26.0470	PUSHBUTTON BOARD 2 * L-L PUSHBUTTON BOARD 2 * L-L PUSHBUTTON BOARD 2 * L-L 15 uF 16V SAL 15 uF 16V SAL 15 uF 16V SAL 15 uF 16V SAL 40 uF 6V SAL 41 uF 6V SAL 42 uF 25V SAL 42 uF 25V SAL	C514 59.22-4102 1 m C515 59.32-4102 1 m C516 59.32-4102 1 m C591	F 6V SAL (only for trafo input) F 50V PE (only for trafo input) F 2% 50V CEP (only for trafo input) F 1% 500V PP F 1% 500V PP F 1% 500V PP	Q109 Q201 Q202 Q203 Q204 Q205 Q206 Q207 Q208	50.03.0515 BC 307 50.03.0350 J 112 50.03.0350 BC 307 50.03.0515 BC 307 50.03.0515 BC 307	PNP IC-100mA, B-100 N-JFET N-JFEN N-	any NS,Mot,Six NS,Mot,Six NS,Mot,Six NS,Mot,Six NS,Mot,Six NS,Mot,Six NS,Mot,Six any any any	R201 \$7.11.3152 R202 \$7.11.3392 R203 \$7.11.3152 R204 \$7.11.3392 R205 \$7.11.3362 R206 \$7.11.3362 R207 \$8.01.8103 R208 \$7.11.4103 R208 \$7.11.4103 R209 \$7.11.4103	3.9 kOhm 1.5 kOhm 3.9 kOhm 3.6 kOhm	18 0.25M WF 18 0.25M HF 18 0.25M HF 18 0.25M MF (for trafoless input) 18 0.25M MF (for trafoless input) 09 0.50M PMG trimming resistor 58 0.25M MF 28 0.25M MF
C7 59.26.5229 C101 59.05.1681 C102 59.05.1681 C103 59.26.0680 C104 59.26.0680 C105 59.34.2101 C107 59.26.0680 C108 59.34.2101 C107 59.26.0680 C108 59.26.0680 C109 59.26.0680	68) pf 1k 500V FP 68) pf 1k 500V FP 68) pf 1k 500V FP 68) pf 68) k 64 (for trafoless input) 100 pf 2k 63V CER (for trafoless input) 100 pf 2k 63V CER (for trafoless input) 68 uf 6V SAL 60 SAL 60 SAL 60 SAL	C605 59.34.2101 100 p C606 59.34.2101 100 p C606 59.34.2101 100 p C607 59.26.0580 68 u C608 59.26.0580 68 u C609 59.26.0580 68 u C610 59.26.0580 68 u C611 59.06.0103 10 n	F 2% 63V CER (for trafoless input) F 2% 63V CER (for trafoless input) F 6V SAL F 6V SAL F 6V SAL F 50V PE F 16V SAL	Q201 Q301 Q302 Q303 Q306 Q306 Q307 Q308	50.03.0350 J 112 50.03.0350 J 112 50.03.0350 J 112 50.03.0350 J 112 50.03.0350 J 112 50.03.0350 J 112 50.03.0351 J 112 50.03.0515 BC 307 50.03.0515 BC 307	N-JEET N-JEET N-JEET N-JEET N-JEET N-JEET N-JEET PNP IC>100mA, B>100 PNP IC>100mA, B>100 PNP IC>100mA, B>100	MS, Mot, Six MS, Mot, Six MS, Mot, Six MS, Mot, Six MS, Mot, Six MS, Mot, Six any any any	R 211 57 . 11 . 3392 R 212 57 . 11 . 3392 R 213 57 . 11 . 3392 R 214 57 . 11 . 3392 R 215 57 . 11 . 4104 R 216 57 . 11 . 4103 R 217 57 . 11 . 4103 R 218 57 . 11 . 4104 R 219 1. 912 . 001 . 24 R 220 57 . 11 . 4104	3.9 kOhm 3.9 kOhm 3.9 kOhm 100 kOhm 10 kOhm 10 kOhm 100 kOhm 100 kOhm	11: 0.25W MF 10: 0.25W MF 10: 0.25W MF 10: 0.25W MF 59: 0.25W MF 20: 0.25W MF 20: 0.25W MF 20: 0.25W MF 00: post.log.variable resistor 5t 50: 0.25W MF
C110 59.26.0680 C111 59.06.0103 C112 59.26.2100 C113 59.26.0680 C114 59.32.4102 C116 59.32.4102 C116 59.32.4102 C190	68 UF 6V SAL 10 nF 50V FE 10 uF 16V SAL 80 uF 50V CER 1 nF 50V CER 1 nF 50V CER 1 nF 50V CER 1 nF 50V CER 1 nF 50V CER 1 nF 50V CER 1 nF 50V CER 1 nF 50V CER 30 uF 5V SAL 3	C613 59.26.0580 68 20 10 10 10 10 10 10 10 10 10 10 10 10 10	F 50V CER F 50V CER F 50V CER F 50V CER (only for trafe input) F 50V PE (only for trafe input) F 2V 50V CER (only for trafe input) any	Q401 Q402 Q403 Q405 Q405 Q406 Q407 Q408 Q409	50.03.0350 J 112 50.03.0350 J 112 50.03.0350 J 112 50.03.0350 J 112 50.03.0350 J 112 50.03.0350 J 112 50.03.0350 J 112 50.03.0515 BC 307 50.03.0515 BC 307	N-JFET N-JFET N-JFET N-JFET N-JFET N-JFET N-JFET N-JFET PMP IC>100mA, B>100 PMP IC>100mA, B>100 N-JFET N-JFET N-JFET N-JFET N-JFET N-JFET N-JFET N-JFET	NS,Mot,Six NS,Mot,Six NS,Mot,Six NS,Mot,Six NS,Mot,Six NS,Mot,Six any any NS,Mot,Six	R221 57.11.4822 R222 57.11.3362 R223 1.912.001.35 R224 19.2.001.43 R225 1.912.001.43 R226 57.11.4104 R229 57.11.4104 R229 57.11.4104	10 kOhm 1 10 kOhm 1 4.7 kOhm 1 10 kOhm 1 10 kOhm 1 100 kOhm 1	22 0.25 M FI 10.25 M FI 10 0.25 M FI 100 post.log.variable resistor, see 2223 St 100 post.log.variable resistor, see 2223 St 100 post.log.variable resistor, see 2225 St 100 post.log.variable resisto
C192 C201 59.05.1681 C202 59.05.1681 C203 59.26.0680 C204 59.26.0680 C205 59.34.2101 C206 59.34.2101 C207 59.26.0680 C208 59.26.0680 C208 59.26.0680 C209 59.26.0680	88) pf 1k 500V PP 880 pF 1k 500V NAL (for trafoless input) 80 uF 6V SAL (for trafoless input) 100 pf 2k 63V CER (for trafoless input) 100 pf 2k 63V CER (for trafoless input) 80 uF 6V SAL 80 uF 6V SAL 80 uF 6V SAL 80 uF 6V SAL	5104 50.04.0125 1N4448 D105 50.04.0125 1N4448 D201 50.04.0125 1N4448 D202 50.04.0125 1N4448 D203 50.04.0125 1N4448 D204 50.04.0125 1N4448 D204 50.04.0125 1N4448 D204 50.04.0125 1N4448 D205 50.04.0125 1N4448	any any any any any any any any any any	Q501 Q502 Q503 Q504 Q506 Q506 Q507 Q508 Q509	50.03.0350 J 112 50.03.0350 J 112 50.03.0350 J 112 50.03.0350 J 112 50.03.0350 J 112 50.03.0350 J 112 50.03.0515 BC 307 50.03.0515 BC 307 50.03.0515 BC 307	N-JET N-JET	NS.Mot.Six NS.Mot.Six NS.Mot.Six NS.Mot.Six NS.Mot.Six any any NS.Mot.Six	R 231 57 . 11 . 4474 R 232 57 . 11 . 4223 R 233 57 . 11 . 4123 R 234 57 . 11 . 4123 R 235 57 . 11 . 4104 R 236 57 . 11 . 4105 R 237 57 . 11 . 4105 R 238 57 . 11 . 4391 R 239 57 . 11 . 4391 R 239 57 . 11 . 4391 R 240 57 . 11 . 4474	390 Ohm 1 MOhm 1 MOhm 390 Ohm 22 kOhm 470 kOhm	54 0.254 MF 54 0.254 MF 55 0.254 MF 55 0.254 MF 55 0.254 MF 56 0.254 MF 56 0.254 MF 56 0.254 MF 56 0.254 MF 56 0.254 MF
C210 59.26.0680 C211 59.06.0103 C212 59.26.2100 C213 59.26.0680 C214 59.32.4102 C215 59.32.4102 C216 59.32.4102 C220	13 nF 50V PE 13 uF 16V 5AL 20 F 6V 5AL 3 nF 50V CER 1 nF 50V CER 1 nF 50V CER 2 nF 50V CER 3 nF 50V CER 5 uF 6V 5AL (only for trafo input) 1 nF 50V FE (only for trafo input)	D303 50.04.0125 IN4448 D304 50.04.0125 IN4448 D305 50.04.0125 IN4448 D401 50.04.0125 IN4448 D402 50.04.0125 IN4448 D403 50.04.0125 IN4448 D403 50.04.0125 IN4448 D404 50.04.0125 IN4448 D405 50.04.0125 IN4448	any any any any any any any	G602 G603 G604 G605 G606 G607 G608 G609	50.03.0350 J 112 50.03.0350 J 112 50.03.0350 J 112 50.03.0350 J 112 50.03.0350 J 112 50.03.0515 BC 307 50.03.0515 BC 307 50.03.0515 BC 307 50.03.0515 BC 307 57.92.1271 6.5 0h 57.92.1271 6.5 0h	PNP IC>100mA, B>100 PNP IC>100mA, B>100 bm PTC Philips	NS, Mot, Six NS, Mot, Six NS, Mot, Six NS, Mot, Six NS, Mot, Six any any any Nr. 2322 662 12711 Nr. 2322 662 12711	R241 57.11.4474 R242 57.11.4104 R243 57.11.4105 R244 57.11.4105 R244 57.11.6106 R245 57.11.4332 R246 57.11.4332 R247 57.11.4332 R248 57.11.4332 R249 57.11.4332	3.3 kOhm 3.3 kOhm 3.3 kOhm 3.3 kOhm	5% 0.25W MF 5% 0.25W MF 5% 0.25W MF 0.00% 0.25W MF 2% 0.25W MF 2% 0.25W MF 2% 0.25W MF 2% 0.25W MF
C291 C292 C301 S.9. 05. 1681 C302 S.9. 05. 1681 C303 S.9. 26. 0680 C304 S.9. 26. 0680 C305 S.9. 34. 2101 C306 S.9. 34. 2101 C306 S.9. 36. 26. 0680 C308 S. 26. 0680 C308 S. 26. 0680 C309 S. 26. 0680 C309 S. 26. 0680	\$80 pf 1k 500V PP \$80 pf 1e 50V PP \$8 up 6v SAL (for trafoless input) \$8 up 6v SAL (for trafoless input) 100 pf 2k 63V CER (for trafoless input) 100 pf 2k 63V CER (for trafoless input) \$8 up 6v SAL \$8 up 6v SAL \$4 up 6v SAL \$6 up 6v SAL \$6 up 6v SAL \$6 up 6v SAL \$6 up 6v SAL \$6 up 6v SAL \$6 up 6v SAL	D 501 50 04 C125 184448 D 502 50 04 C125 184448 D 503 50 04 C125 184448 D 503 50 04 C125 184448 D 503 50 04 C125 184448 D 503 50 04 C125 184448 D 503 50 04 C125 184448 D 603 50 04 C125 184448 D 603 50 04 C125 184448 D 603 50 04 C125 184448 D 603 50 04 C125 184448 D 603 50 04 C125 184448 D 603 50 04 C125 184448 D 101 02 04 C125 184448	any any any any any any any any any any	F	57,92,1271 6.5 0 57,92,1271 6.5 0 57,99,0206 50 0 57,111,3152 1.5 k0 57,111,3392 3.9 k0 57,111,3392 3.9 k0 57,111,3392 3.6 k0 57,111,3362 3.6 k0 57,111,3362 3.6 k0 58,01,8103 10 k0 57,111,4103 10 k0 57,111,4103 10 k0 57,111,4103 10 k0	hm PTC Philips hm 1% 0.25M MF hm 1% 0.25M MF hm 1% 0.25M MF hm 1% 0.25M MF hm 1% 0.25M MF hm 1% 0.25M MF (for trafol hm 1% 0.50M PMG (for trafol hm 10% 0.50M PMG MF hm 10% 0.25M MF hm 10% 0.25M MF hm 5% 0.25M MF	ess input)	R 290 R 291 R 292 R 292 R 301 S 302 S 11.3152 R 303 S 11.3392 R 304 S 11.3392 R 305 S 11.3392 R 306 S 11.3392 R 306 S 11.3392 R 306 S 11.3392 R 309 S 309 S 11.3393	1.8 kOhm 4.7 kOhm 100 Ohm 1.5 kOhm 3.9 kOhm 1.5 kOhm 3.9 kOhm 3.6 kOhm 10 kOhm	2% 0.25W HF (only for trafo input) 1% 0.25W HF (only for trafo input) 1% 0.25W HF (only for trafo input) 1% 0.25W HF 1% 0.25W HF 1% 0.25W HF 1% 0.25W HF 1% 0.25W HF 1% 0.25W HF 1% 0.25W HF (for trafoless input) 1% 0.25W HF (for trafoless input) 1% 0.25W HF (for trafoless input) 1% 0.25W HF (for trafoless input) 2% 0.25W HF 5% 0.25W HF 5% 0.25W HF
C311 59.06.0103 C.312 59.26.2100 C313 59.26.0680 C.3145 59.32.4102 C315 59.32.4102 C316 59.32.4102 C390 C391 C392 C392 C391 C392 C392 C392 C391 C392	10 nf 500 PE 10 uf 16V SAL 68 uf 6V SAL 1 nf 50V CER 1 nf 50V CER 1 nf 50V CER 1 nf 50V CER 30 pf 2V 50V CER 330 pf 2V 50V CER (only for trafo input) 330 pf 1V 500 PP 680 pf 1V 500V PP 680 pf 1V 500V PP	D1201	A see 1.912.597.00 A see 1.912.597.00 A see 1.912.597.00 A see 1.912.597.00 See 1.912.597.00 See 1.912.597.00	R120	57.11.3392 3.9 k01 57.11.3392 3.9 k01 57.11.3392 3.9 k01 57.11.3392 3.9 k01 57.11.4103 100 k01 57.11.4103 10 k01 57.11.4104 100 k01 57.11.4104 100 k01 1.912.001.24 100 k01 57.11.4104 100 k01	hm 1% 0.25W MF hm 1% 0.25W MF hm 1% 0.25W MF hm 5% 0.25W MF hm 2% 0.25W MF hm 2% 0.25W MF hm 2% 0.25W MF hm 5% 0.25W MF hm 5% 0.25W MF	istor St	R310 57.11.4103 R311 57.11.3392 R312 57.11.3392 R313 57.11.3392 R314 57.11.3392 R315 57.11.4103 R316 57.11.4104 R316 57.11.4104 R317 37.11.4104 R320 37.11.4104	3.9 kOhm 3.9 kOhm 3.9 kOhm 3.9 kOhm 100 kOhm 10 kOhm 10 kOhm 100 kOhm 100 kOhm 100 kOhm	1% 0.25W MF 1% 0.25W MF 1% 0.25W MF 5% 0.25W MF 5% 0.25W MF 2% 0.25W MF 2% 0.25W MF 5% 0.25W MF 5% 0.25W MF 5% 0.25W MF 5% 0.25W MF
C402 59.05.1681 C403 59.26.0680 C404 59.26.0680 C405 59.34.2101 C405 59.34.2101 C406 59.34.2101 C407 59.26.0680 C408 59.26.0680 C409 59.26.0680 C409 59.26.0680 C409 59.26.0680 C411 59.26.0680	68 uf 6V SAL (for trafoless input) 68 uf 6V SAL (for trafoless input) 100 pf 28 6V SAL (for trafoless input) 69 uf 28 6V SAL 69 uf 6V SAL 70 uf 6V SAL 68 uf 6V SAL 68 uf 6V SAL 68 uf 6V SAL	DI502	see 1.912.597.00 see 1.912.597.00 yee 1.912.597.00 Ti,51g,Ra dual op. amp. Ti,51g,Ra dual op. amp. Ti,51g,Ra dual op. amp. Ti,51g,Ra	R 124 R 125 R 126 R 127 R 128 R 129 R 130	57.11.4822 8.2 k0f 57.11.3362 3.6 k0f 1.912.001.35 10 k0f 1.912.001.43 4.7 k0f 57.11.4104 100 k0f 57.11.4104 100 k0f 57.11.4104 100 k0f 57.11.4104 470 k0f 57.11.4404	hm 10% pos.log.variable resi hm 10% neg.log.variable resi hm 10% pos.log.variable resi hm 10% pos.log.variable resi hm 10% neg.log.variable resi hm 5% 0.25M MF hm 5% 0.25M MF	istor istor, see R123 St istor istor, see R125 St istor, see R125 St	R321 57.11.4822 R322 75.11.3862 R323 1.912.001.35 R324 R325 1.912.001.43 R327 R327 R328 57.11.4104 R330 57.11.4104	10 k0hm 10 k0hm 4.7 k0hm	28 O.25M MF 18 O.25M MF 190 pos.log.variable resistor 100 pos.log.variable resistor, see R323 St 100 pos.log.variable resistor, see R323 St 100 pos.log.variable resistor, see R325 St 100 pos.log.variable resistor, see R325 St 100 pos.log.variable resistor, see R325 St 100 pos.log.variable pos.log.variable 100 pos.log.varia
C	100 ur 169' SAL 68 uf 69' SAL 1 nF 500' CER 1 nF 500' CER 1 nF 500' CER 1 nF 500' CER 1 nF 500' PE (only for trafo input) 10 nF 500' PE (only for trafo input) 500 pF 18' 500' PP 5600 pF 18' 5000' PP	IC301 50.09.0106 NE55227 IC302 50.09.1016 NE55227 IC401 50.09.0106 NE55227 IC501 50.09.0106 NE55227 IC501 50.09.0106 NE55227 IC502 50.09.0106 NE55227 IC502 50.09.0106 NE55227 IC502 50.09.0106 NE55227	N dual op. amp. Ti,Sig,Ra N dual op. amp. Ti,Sig,Ra N dual op. amp. Ti,Sig,Ra N dual op. amp. Ti,Sig,Ra N dual op. amp. Ti,Sig,Ra N dual op. amp. Ti,Sig,Ra	R131 R132 R133 R134 R135 R136 R137 R138 R141	57.11.4223 22 k01 57.11.4104 100 k01 57.11.4391 390 01 57.11.4391 390 01 57.11.4105 1 M01 57.11.4391 390 01 57.11.4223 22 k01 57.11.4274 470 k01	han 5% 0.25% MF hs 5% 0.25% MF han 5% 0.25% MF hs 5% 0.25% MF hs 5% 0.25% MF hs 5% 0.25% MF hs 5% 0.25% MF hs 5% 0.25% MF hs 5% 0.25% MF		R	470 kOhm 22 kOhm 12 kOhm 100 kOhm 390 Ohm 1 MOhm 1 MOhm 390 Ohm 22 kOhm 470 kOhm	58 0,25M MF 54 0,25M MF 54 0,25M MF 54 0,25M MF 55 0,25M MF 55 0,25M MF 58 0,25M MF 58 0,25M MF 58 0,25M MF
C502 59,05.1881 C503 59,26.0880 C504 59,26.0880 C505 59,34.2101 C506 59,34.2101 C506 59,34.2101 C506 59,24.0820 C509 59,26.0820 C510 59,26.0820 C511 59,06.0103 C512 59,26.2100 C513 59,26.0830	\$50 pt 18 500 pt 51 500 pt 18 500 pt 18 500 pt 18 500 pt 18 500 pt 19 500 pt 19 500 pt 19 500 pt 28 53V CER (for trafoless input) 100 pf 28 63V CER (for trafoless input) 18 50 pt 28 63V CER (for trafoless input) 18 50 pt 28 63V CER (for trafoless input) 18 50 pt 28 50V CER (for trafoless input) 18 50V pt 28 50V pt	P 4 54.01.0359 2716pt P 5 54.11.207 278 pt P 6 54.01.0359 2716pt 0.101 50.03.0350 3 112 0.102 50.03.0350 3 112 0.103 50.03.0350 3 112 0.104 50.03.0350 3 112 0.105 50.03.0350 3 112 0.105 50.03.0350 3 112 0.106 50.03.0350 3 112 0.106 50.03.0350 3 112 0.107 50.03.03515 86.207 0.108 50.03.03515 86.207 0.108 50.03.03515 86.207 0.108 50.03.03515 86.207	m euroconnector Bu euroconnector Bu H-FET NS, Mot, 5:1 H-FET NS, MOT, FET NS, MOT, FET NS, MOT, FET NS, MOT,	R	57. 11.4474 470 k0 57. 11.4104 100 k0 57. 11.4105 1 M0 57. 11.6106 10 M0 57. 11.4332 3.3 k0 57. 11.4332 3.3 k0 57. 11.4332 3.3 k0 57. 11.4332 3.3 k0 57. 11.4332 1.3 k0 57. 11.4332 1.3 k0 57. 11.4332 1.3 k0 57. 11.4332 1.3 k0 57. 11.4332 1.3 k0 57. 11.4332 1.3 k0 57. 11.4332 1.3 k0 57. 11.4332 1.3 k0 57. 11.4332 1.3 k0 57. 11.4332 1.3 k0 57. 11.4332 1.3 k0	thm 5\$ 0.25% MF thm 10\$ 0.25% MF thm 10\$ 0.25% MF thm 2\$ 0.25% MF thm 2\$ 0.25% MF thm 2\$ 0.25% MF thm 2\$ 0.25% MF thm 2\$ 0.25% MF thm 2\$ 0.25% MF thm 2\$ 0.25% MF thm 2\$ 0.25% MF thm 1\$ 0.25%		R341 57.11.4474 R. 342 57.11.4474 R342 57.11.4105 R344 57.11.6106 R345 57.11.4332 R346 57.11.4332 R347 57.11.4332 R348 57.11.4332 R390 R391 R390		\$\$ 0.25W MF \$\$ 0.25W MF \$\$ 0.25W MF \$\$ 0.25W MF 2\$ 0.25W MF 2\$ 0.25W MF 2\$ 0.25W MF 2\$ 0.25W MF 1\$ 0.25W MF (only for trafo input) 2\$ 0.25W MF (only for trafo input) 1\$ 0.25W MF (only for trafo input) 1\$ 0.25W MF (only for trafo input)

Compact (Hex) Density Mixer 1.912.514

	•					,
AdPOSREF.No	DESCRIPTION	MANUFACTURER	AdPOS	REF.No	DESCRIPT	IONMANUFACTURER
R393 R401 57.11.3152	1.5 kOhm 1%	0.25W MF (only for trafo input)	R591 R592 R593	· · ·	1.8 kOhm 4.7 kOhm 100 Ohm	2% 0.25W MF (only for trafo input) 1% 0.25W MF (only for trafo input) 1% 0.25W MF (only for trafo input)
R 402 57.11.3392 R 403 57.11.3392 R 404 57.11.3392 R 405 57.11.3362 R 406 57.11.3362 R 407 58.01.8103 R 408 57.11.4182 R 409 57.11.4103	1.5 kOhm 1% 3.9 kOhm 1% 3.6 kOhm 1% 3.6 kOhm 1% 10 kOhm 10% 1.8 kOhm 5%	0.25W MF 0.25W MF 0.25W MF 0.25W MF (for trafoless input) 0.25W MF (for trafoless input) 0.50W PMG trimming resistor 0.25W MF	R601 R602 R603 R604 R605 R606 R607	57.11.3152 57.11.3392 57.11.3152 57.11.3392 57.11.3362 57.11.3362 57.11.3362 58.01.8103	1.5 kOhm 3.9 kOhm 1.5 kOhm 3.9 kOhm 3.6 kOhm 3.6 kOhm	1% 0.25W MF 1% 0.25W MF 1% 0.25W MF 1% 0.25W MF 1% 0.25W MF 1% 0.25W MF (for trafoless input) 1% 0.25W MF (for trafoless input) 10% 0.50W PMG trimming resistor
R410 57.11.4103 R411 57.11.3392 R412 57.11.3392	10 kOhm 5% 3.9 kOhm 1% 3.9 kOhm 1%	0.25W MF 0.25W MF 0.25W MF	R608 R609 R610	57.11.4182 57.11.4103 57.11.4103	1.8 kOhm 10 kOhm 10 kOhm	5% 0.25W MF 2% 0.25W MF 5% 0.25W MF
R 413 57.11.3392 R 414 57.11.3392 R 415 57.11.4104 R 416 57.11.4103 R 417 57.11.4103 R 418 57.11.4104 R 419 1.912.001.24 R 420 57.11.4104	3.9 kOhm 1% 100 kOhm 5% 10 kOhm 2% 10 kOhm 2% 100 kOhm 5% 10 kOhm 10% 100 kOhm 5%	0.25W MF	R611 R612 R613 R614 R615 R616 R617 R618	57.11.3392 57.11.3392 57.11.3392 57.11.3392 57.11.4104 57.11.4103 57.11.4104 1.912.001.24	3.9 kOhm 3.9 kOhm 3.9 kOhm 100 kOhm 10 kOhm 10 kOhm 100 kOhm	1% 0.25W MF 1% 0.25W MF 1% 0.25W MF 1% 0.25W MF 5% 0.25W MF 2% 0.25W MF 2% 0.25W MF 2% 0.25W MF 10% pos.log.variable resistor St
R 421 57.11. 4822 R 422 57.11. 3362 R 423 1.912.001.35 R 424 1.001.43 R 426	3.6 kOhm 1% 10 kOhm 10% 10 kOhm 10% 4.7 kOhm 10% 10 kOhm 10% 10 kOhm 10% 100 kOhm 5% 100 kOhm 5%	neg.log.variable resistor, see R423 St pos.log.variable resistor pos.log.variable resistor, see R425 St neg.log.variable resistor, see R425 St	R620 R621 R622 R623 R624 R625 R626 R627 R627	57.11.4104 57.11.4822 57.11.3362 1.912.001.35 1.912.001.43 57.11.4104 57.11.4104	8.2 kOhm 8.2 kOhm 3.6 kOhm 10 kOhm 10 kOhm 4.7 kOhm 10 kOhm 10 kOhm 10 kOhm	5% 0.25W MF 2% 0.25W MF 1% 0.25W MF 10% pos.log.variable resistor 10% pos.log.variable resistor 10% pos.log.variable resistor 10% pos.log.variable resistor 10% pos.log.variable resistor 10% pos.log.variable resistor, see R625 St 10% neg.log.variable resistor, see R625 St 5% 0.25W MF
R431 57.11.4474 R432 57.11.4223 R433 57.11.4123 R434 57.11.4104 R435 57.11.4391 R436 57.11.4105	22 kOhm 5% 12 kOhm 5% 100 kOhm 5% 390 Ohm 5% 1 MOhm 5%	0.25W MF 0.25W MF 0.25W MF 0.25W MF 0.25W MF 0.25W MF	R629 R630 R631 R632 R633 R634	57.11.4104 57.11.4474 57.11.4223 57.11.4123 57.11.4104	100 kOhm 470 kOhm 22 kOhm 12 kOhm 100 kOhm	5% 0.25W MF 5% 0.25W MF 5% 0.25W MF 5% 0.25W MF 5% 0.25W MF
R437 57.11.4105 R438 57.11.4391 R439 57.11.4223 R440 57.11.4474 R441 57.11.4474	390 Ohm 5% 22 kOhm 5% 470 kOhm 5%	0.25W MF 0.25W MF 0.25W MF 0.25W MF	R635 R636 R637 R638 R639 R640	57.11.4391 57.11.4105 57.11.4105 57.11.4391 57.11.4223 57.11.4474	390 Ohm 1 MOhm 1 MOhm 390 Ohm 22 kOhm 470 kOhm	5% 0.25W MF 5% 0.25W MF 5% 0.25W MF 5% 0.25W MF 5% 0.25W MF 5% 0.25W MF
R 442 57.11. 4104 R 443 57.11. 4105 R 444 57.11. 6106 R 445 57.11. 4332 R 446 57.11. 4332 R 447 57.11. 4332 R 448 57.11. 4332 R 449 57.11. 4332	1 MOhm 5% 10 MOhm 10% 3.3 kOhm 2% 3.3 kOhm 2% 3.3 kOhm 2% 3.3 kOhm 2% 3.3 kOhm 2%	: 0.25W MF 0.25W MF 0.25W MF 0.25W MF 0.25W MF 0.25W MF 0.25W MF 0.25W MF 0.25W MF 0.25W MF 0.25W MF	R641 R642 R643 R644 R645 R646 R647 R648	57.11.4474 57.11.4104 57.11.4105 57.11.6106 57.11.4332 57.11.4332 57.11.4332 57.11.4332	470 kOhm 100 kOhm 1 MOhm 3.3 kOhm 3.3 kOhm 3.3 kOhm 3.3 kOhm	5% 0.25W MF 5% 0.25W MF 5% 0.25W MF 10% 0.25W MF 2% 0.25W MF 2% 0.25W MF 2% 0.25W MF 2% 0.25W MF
R491 R492 R493	4.7 kOhm 1% 100 Ohm 1%	0.25W MF (only for trafo input) 0.25W MF (only for trafo input) 0.25W MF (only for trafo input)	R690 R691 R692		4.3 kOhm 1.8 kOhm 4.7 kOhm	1% 0.25W MF (only for trafo input) 2% 0.25W MF (only for trafo input) 1% 0.25W MF (only for trafo input) 1% 0.25W MF (only for trafo input)
R501 57.11.3152 R502 57.11.3392 R503 57.11.3152 R504 57.11.3392 R505 57.11.3362	3.9 kOhm 1% 1.5 kOhm 1% 3.9 kOhm 1%	; 0.25W MF ; 0.25W MF ; 0.25W MF ; 0.25W MF ; 0.25W MF (for trafoless input)	R693 S101 S102 S103	· ·	100 Ohm 1*U 1*U 2*U	see 1.912.597.00 see 1.912.597.00 combined with variable resistor R 125 St
R506 57.11.3362 R507 58.01.8103 R508 57.11.4182 R509 57.11.4103 R510 57.11.4103	3.6 kOhm 1% 10 kOhm 10% 1.8 kOhm 5% 10 kOhm 2%	g 0.25W MF (for trafoless input) g 0.50W PMG trimming resistor g 0.25W MF g 0.25W MF g 0.25W MF	S201 S202 S203	: :	1*U 1*U 2*U	see 1.912.597.00 see 1.912.597.00 combined with variable resistor R 225 St
R511 57.11.3392 R512 57.11.3392 R513 57.11.3392	3.9 kOhm 1% 3.9 kOhm 1% 3.9 kOhm 1%	s 0.25W MF s 0.25W MF s 0.25W MF	S301 S302 S303	• •	1*U 1*U 2*U 1*U	see 1.912.597.00 see 1.912.597.00 combined with variable resistor R 325 St see 1.912.597.00
R514 57.11.3392 R515 57.11.4104 R516 57.11.4103 R517 57.11.4103 R518 57.11.4104	100 k0hm 5% 10 k0hm 2% 10 k0hm 2%	s 0.25W MF s 0.25W MF	S401 S402 S403	: :	1*U 2*U 1*U	see 1.912.597.00 combined with variable resistor R 425 St see 1.912.597.00
R519 1.912.001.24 R520 57.11.4104		s 0.25W MF	\$502 \$503	: :	1*U 2*U 1*U	see 1.912.597.00 combined with variable resistor R 525 St see 1.912.597.00
R521 57.11.4822 R522 57.11.3362 R523 1.912.001.35 R524 . R525 1.912.001.43	8.2 kOhm 2% 3.6 kOhm 1% 10 kOhm 10% 10 kOhm 10% 4.7 kOhm 10%	neg.log.variable resistor, see R523 St	S601 S602 S603		1*U 2*U	see 1.912.597.00 combined with variable resistor R 625 tinput trafo 1:0.62 (only trafo input) St
R526 R527 R528 57.11.4104 R529 57.11.4104 R530 57.11.4104	10 k0hm 10% 10 k0hm 10% 100 k0hm 5% 100 k0hm 5% 100 k0hm 5%	& pos.log.variable resistor, see R525 St & neg.log.variable resistor, see R525 St & 0.25W MF & 0.25W MF	XIC1 XIC2 XIC3 XIC4 XIC5	53.03.0166 53.03.0166 53.03.0166 53.03.0166 53.03.0166		IC-socket DIL 8 pin IC-socket DIL 8 pin IC-socket DIL 8 pin IC-socket DIL 8 pin IC-socket DIL 8 pin
R531 57.11.4474 R532 57.11.4223 R533 57.11.4123 R534 57.11.4104 R535 57.11.4305 R536 57.11.4105	22 kOhm 5% 12 kOhm 5% 100 kOhm 5% 390 Ohm 5%	6 0.25W MF 6 0.25W MF 6 0.25W MF 6 0.25W MF 8 0.25W MF 8 0.25W MF	XIC6 XIC7 XIC8 XIC9 XIC10	53.03.0166 53.03.0166 53.03.0166 53.03.0166		IC-socket DIL 8 pin IC-socket DIL 8 pin IC-socket DIL 8 pin IC-socket DIL 8 pin IC-socket DIL 8 pin
R537 57.11.4105 R538 57.11.4391 R539 57.11.4223	1 MOhm 5% 390 Ohm 5% 22 kOhm 5%	6 0.25W MF 6 0.25W MF 6 0.25W MF	XIC11 XIC12	53.03.0166	e. e	IC-socket DIL 8 pin IC-socket DIL 8 pin
R540 57.11.4474 R541 57.11.4474	470 kOhm 5%	6 0.25W MF 6 0.25W MF	PE=Polyeste	r, PP=Polypropy	len, PS=Pol	
R542 57.11.4104 R543 57.11.4105 R544 57.11.6106 R545 57.11.4332 R546 57.11.4332 R547 57.11.4332 R548 57.11.4332	100 kOhm 58 1 MOhm 58 10 MOhm 108 3.3 kOhm 28 3.3 kOhm 28 3.3 kOhm 28	\$ 0.25W MF \$ 0.25W MF \$ 0.25W MF \$ 0.25W MF \$ 0.25W MF \$ 0.25W MF \$ 0.25W MF \$ 0.25W MF	MANUFACTURE	R: Ra=Raytheon,		nix, St=Studer EX) DENSITY MONITOR MM 84.02.2400
R590	4.3 kOhm 19	% 0.25W MF (only for trafo input)				

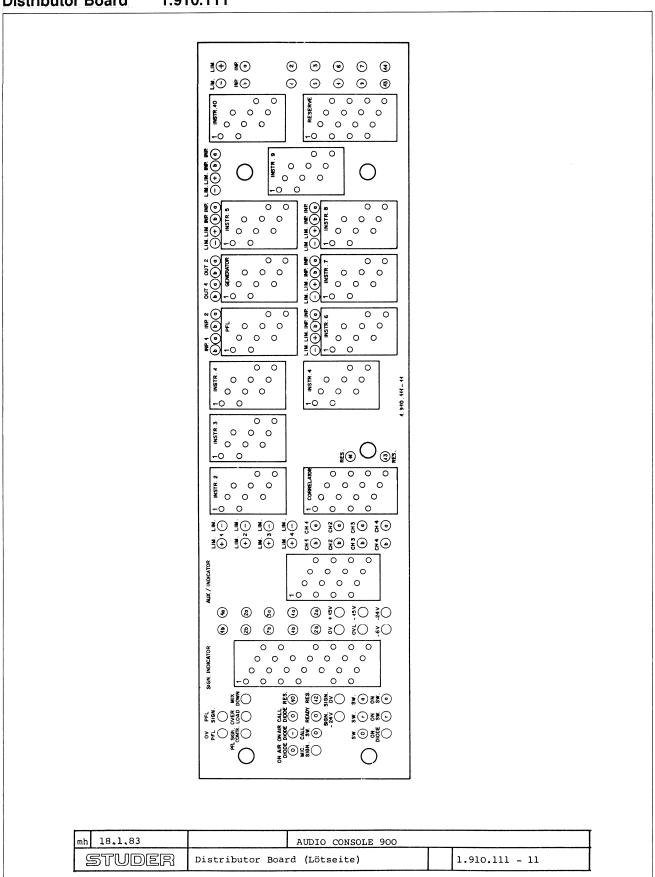
KAPITEL 6:	Ein	schub-Module des Meterpanels	1.913		
	INHALT				
	1.	Bus Board	1.910.111		
	2.*	VU / PPM-Pegelmesser (30 LED)			
			4CH1.913.321		
	3.*	Bargraph-Pegelmesser (Gasplasma)			
			8CH 1.913.411/412		
	4.	AUX-Pegelmesser			
	5.*	Gain Reduction Meter (Zeigerinstrument)			
	6.	Signalisations-Anzeigeeinheit			
	7.	Test Generator			
	8.*	Kompressor/Limiter/Gate			
	9.*	Sammelschienenanwahl 9 24 Kanäle			
	10.*	Sammelschienenanwahl 1 24 Kanäle			
	11.	PFL-Verstärker	1.913.200		
	12.*	Korrelator 2CH/4CH	1.913.210/211		
	13.*	PPM-Zeigerinstrumente	1.913.220/221		
	14.*	VU-Zeigerinstrumente	1.913.230/231		
SECTION 6:		Ig-in Units of the meter panel	1.913		
	1.	Bus board	1 010 111		
	1. 2.*	VU / PPM display (30 LED)			
	۷."		4CH1.913.321		
	3.*	Bargraph display (plasma)			
	٥. "	Bargraph display (plasma)	8CH 1.913.411/412		
	4.	AUX indicator	•		
		Gain Reduction Meter (pointer instrument)			
	5.				
	6. 7	Signalization indication unit			
	7.	Audio generator			
	8.*	Compressor/limiter/gate			
	9.*	Bus selector 9 24 channels			
	10.*	Bus selector 1 24 channels			
	11.	PFL amplifier			
	12.*	Correlator 2CH/4CH			
	13.*	PPM (pointer instrument)			
	14.*	VU meter (pointer instrument)			
	*	Diese Beschreibungen werden kundenspezifisch be These descriptions are supplied according to the cu			

Distributor Board 1.910.111



Distributor Board

1.910.111



Level meter VU/PPM 30 LED and gain reduction meter 10 LED

CONTENTS		Page	
1.	General		
2.	Functional description		
3.	Technical data VU/PP meter	3	
4.	Block diagram	4	
5.	Alignment instruction VU/PP meter	4	
6.	Maintenance instructions	ξ	
7.	Gain reduction meter	ε	
8.	Diagrams		
	VU/PPM 30 LED ■ Diagram ■ Component layout, position list		
	Gain reduction meter Diagram Component layout, position list	9 10	

SCOPE OF VALIDITY

This manual applies to the following modules:

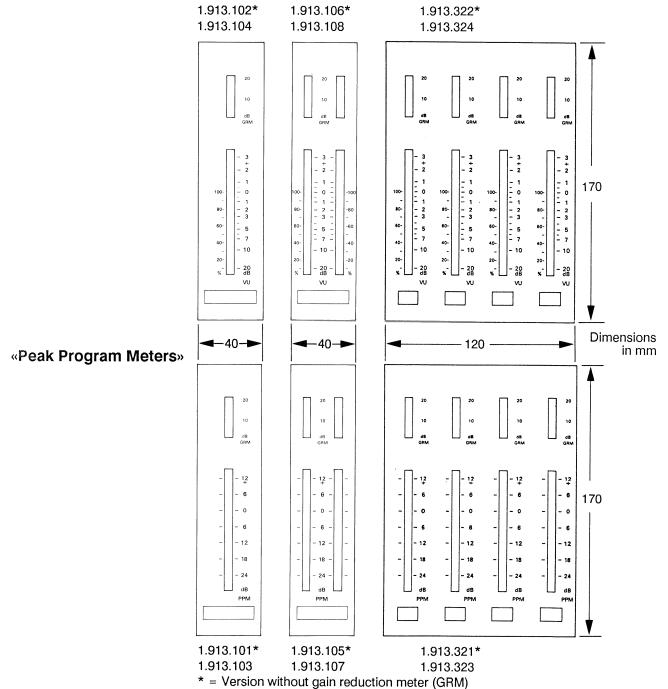
Display	1 Channel	2 Channels	4 Channels	PCB Nr.
PPM	1.913.101	1.913.105	1.913.321	1.913.295
VU	1.913.102	1.913.106	1.913.322	1.913.295
PPM / GRM	1.913.103	1.913.107	1.913.323	1.913.295/297
VU / GRM	1.913.104	1.913.108	1.913.324	1.913.295/297

1. General

The **STUDER output meter VU-PPM 30 LED** has been developed for installation into the display panel of STUDER mixing consoles. Instruments with VU (volume unit) or PPM (peak program meter) characteristic are available. In place of the bar indication, an optional dot indication is available.

The instruments listed below are equipped with the two PCBs 1.913.295 (VU/PPM) and 1.913.297 (GRM) corresponding to the table on page 1. The circuit diagram relating to the corresponding circuit board number should be consulted.

«Volume Unit Meters»



2. **Functional description**

PPM: The peak program meter is a quasi-peak value

instrument with a long release time. When a signal voltage corresponding to a level of 0 dB is applied for 10 ms, the resulting indication should

be -1 dB.

The desired decay time to -20dB is 1.7 s.

VU-meter: The VU-meter indicates signals according to the

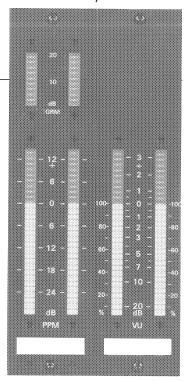
> standard defined by ANSI 1954. When a signal with a duration of 300 ms is applied, the indication should be 99% of the reference value. The rise and decay time on the VU-meter are

identical. The factory set lead is 6 dB.

Gain reduction meter: When the limiter/compressor is switched on, the

GRM indicates the magnitude of the gain

reduction.



3. Technical data

PCB 1.913.295

General:

Input sensitivity

of the reference indication: -1 dBu... + 16 dBu

Input impedance $>10 \text{ k}\Omega$

Supply: DC ±15 V or DC +24 V

Current consumption: Quiescent 45mA 35 mA Medium load 58mA 56mA Full load 80mA 80 mA

VU-meter: Indicating range: -20VU...+30VU

Accuracy: ±1 segment (precond.:-10VU...+3VU/0°...50°C/31.5Hz...16kHz) Response time to -1VU: $207(\pm 30)$ ms

PP-meter: Indicating range: -30dBu... + 15dBu

> Accuracy: ±1 seament (precond.:-30dB...+15dB/0°...50°C/31.5Hz...16kHz)

Dynamic behavior:

Jumper normal: 0dB for 10 ms →indication: -1dB ±0.5dB Jumper normal: 0dB for 3ms →indication: -4dB ±1dB Jumper fast: 0dB for~100µs →indication: 1dB

Decay time 0...-20dB: $1.7(\pm 0.3)s$

Circuit board sizes: Height x depth, with connector: 96 mm x 95 mm

> Width: 18 mm

Center between M3 mounting holes: 85.1 mm (3.35")

E/3 FDITION: 14. Februar 1990

4. Block diagram

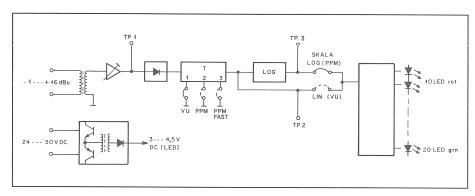


Fig. 2 VU-PPM block diagram: The settings VU/PPM/PPM fast or lin/log are established with the jumpers JS 1 and JS 2 respectively (see Fig. 3)

5. Alignment instructions VU/PP meter

PCB 1.913.295

Measuring instruments:

AC voltmeter

Ri ≥ 20 kΩ

DC voltmeter

Ri ≥100 kΩ, preferably digital VM

Generator, 31.5Hz...16kHz, 0...16dBu; attenuator with 10dB increments.

Alignment elements

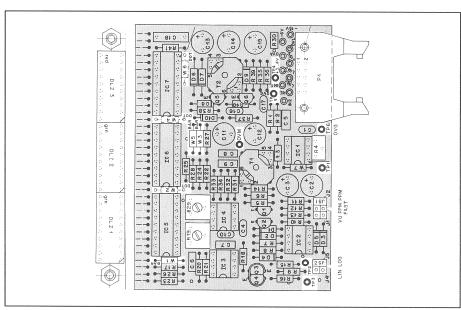


Fig. 3 Alignment elements of the VU/PPM 30 LED

Aligning the line level:

From the generator feed line level (-1dBu ... +16dBu) to the input. Align with R4 until all green LEDs are light and the red LEDs are still dark.

[on TP3: 2.5(±0.1)V]

6. Maintenance instructions

PCB 1.913.295

Test input range: Generator: 1 kHz on input, level: -1dBu ... +16 dBu

AC VM: Hot to TP 1, cold to TP 6 (0V G) U_{TP1} adjustable with R4 to $\underline{290(\pm 10)}$ mV AC

Rectifier and indication: Both jumpers set to the VU/LIN position.

Generator: 1kHz with 0dBu level on input

 U_{TP1} : Adjust with R4 to $\underline{290(\pm 2)mV}$ AC. All green LEDs must be light.

DC VM: Hot to TP2, cold to TP6. $U_{TP2} = -380(\pm 15) \text{mV DC}$ **DC VM**: Hot to TP3, cold to TP6

 $U_{TP3} = \pm 2.575(\pm 0.1) \text{V DC}$. All green LEDs are light. **Check**: Adjust the generator level in such a way that: $U_{TP3} = \pm 3.8(\pm 0.1) \text{V DC}$. All diodes are light.

 $U_{TP3}^{110} = +0.17(\pm 0.02) \text{V DC}$. Only the lowest green LED is light.

Logarithmation (PPM): Both jumpers are set to PPM/LOG.

Generator: 1 kHz with +6 dBu level on input. Set U_{TP2} with R4 to $\underline{1.18(\pm 0.05 \text{V})}$ DC.

The two trimmers have the following basic setting:



Alignment procedure:

DC VM: hot to TP3, cold to TP6.

A: Align the upper value with R19. Desired: $U_{TP3} = 3.06(\pm 0.10)V$. All green LEDs and 4 red LEDs are light. Indication +6dB.

B: Attenuation by 30 dB with attenuator.

C: Align the lower value with R29. Desired: $U_{TP3} = 0.56(\pm 0.02)V$.

4 green LEDs are light. Indication -24 dB

Repeat the procedure $A \rightarrow B \rightarrow C \rightarrow A \rightarrow ...$ several times.

DC/DC converter: To check, connect the DC VM hot to TP4, cold to TP5. Generator with line level on

input causes all green LEDs to light.

Supply voltage: +24 V DC $\rightarrow \text{TP4} = 3.1(\pm 0.1)\text{ V}$ +30 V DC $\rightarrow \text{TP4} = 4.1(\pm 0.1)\text{ V}$

7. Gain reduction meter

PCB 1.913.297

Connecting the GRM:

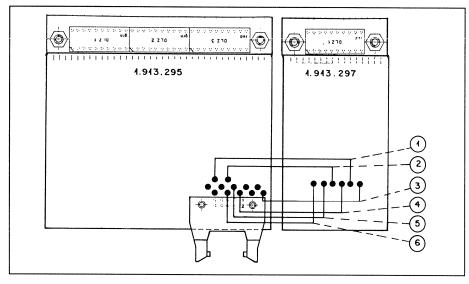


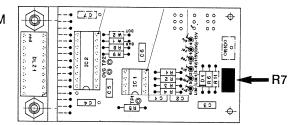
Fig. 4 Connection GRM - VU/PPM.

Conductor assignment of the connection cable:

	Color	Signal
1	yellow	0 VG
2	green	+3+4,5 V
3	blue	- 15 V
4	red	+15 V
5	white	LIM +
6	grey	LIM -

Aligning the GRM:

- Limiter switched off
- Feed a test signal via an input channel. Set the level on the master output to nominal level +20 dB.
- Switch on the limiter
- Align with R7 to a GRM indication of +20 dB.



Technical data:

Supply The GRM indicator is supplied by the switching regulator of the basic unit

1.913.295: 24 ... 30 VDC.

Current consumption: quiescent 10mA

full load 25mA

Indication Voltage range: min. control 0V ... +2V DC

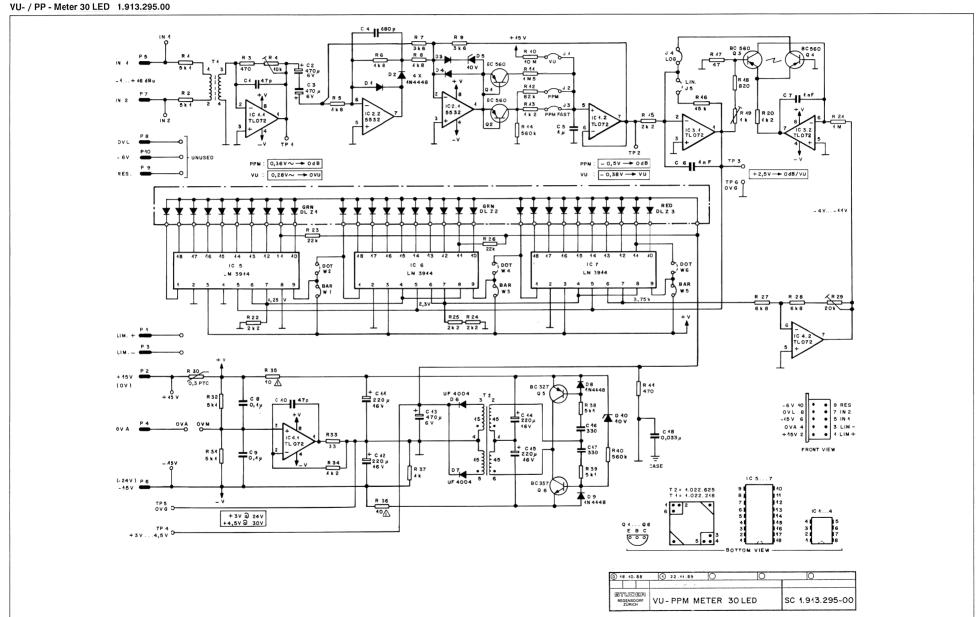
max. control 0V ... +11V DC

Circuit board dimensions: Height x depth: 45 mm x 85 mm

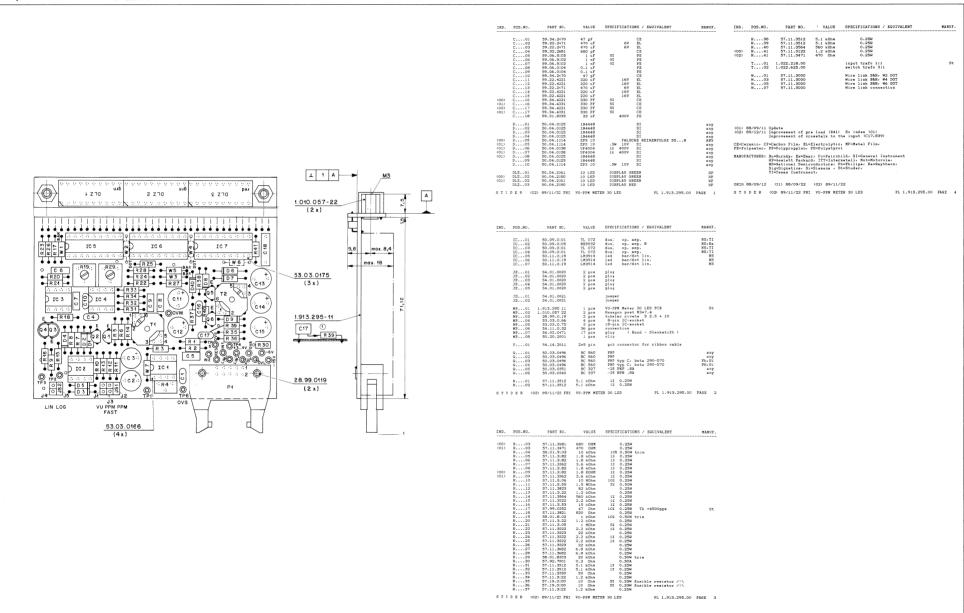
Width: 18 mm

Center between M3 mounting holes: 39.4 mm (1.55")

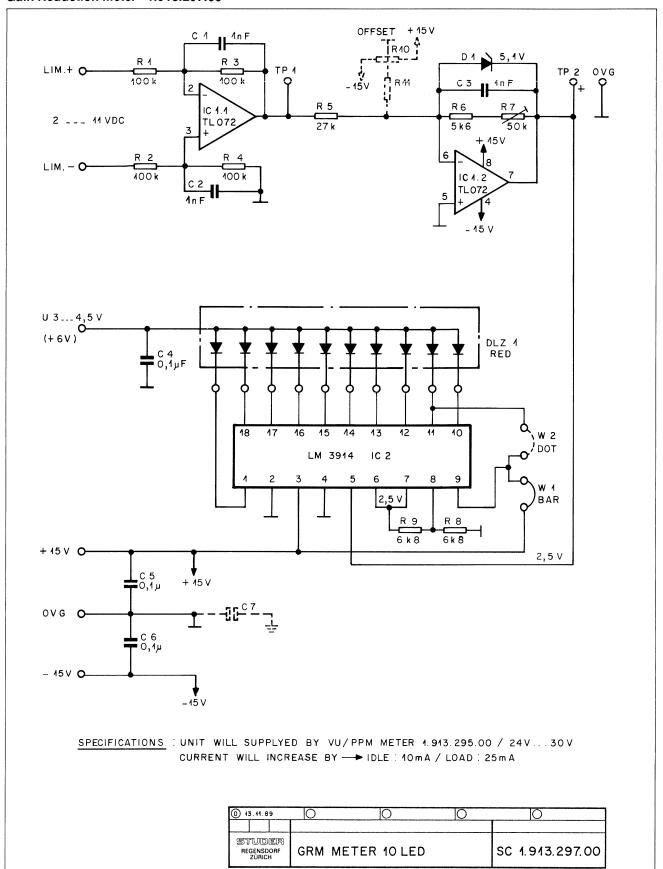
Diagrams / Schemata

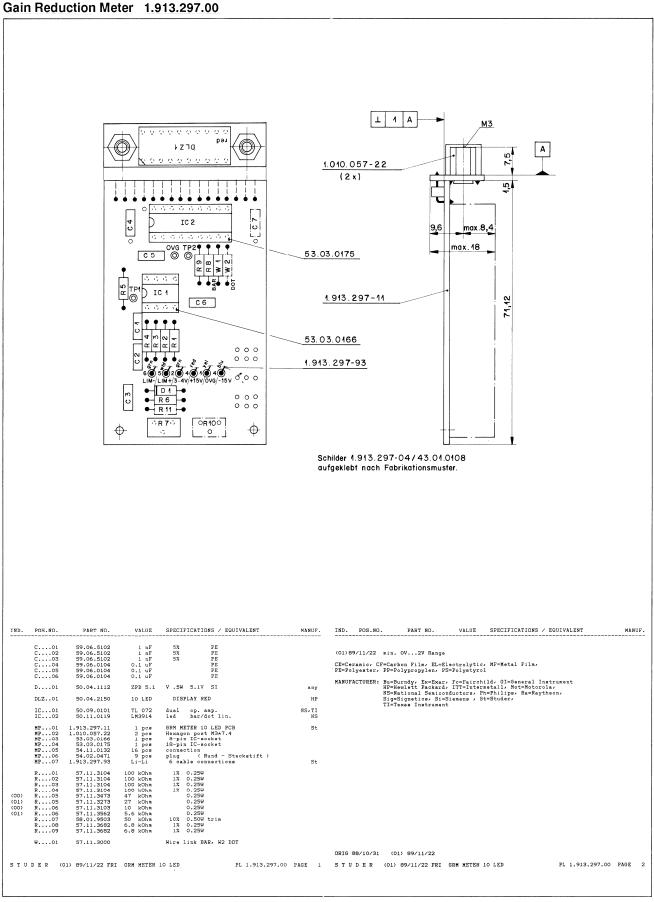


VU- / PP - Meter 30 LED 1.913.295.00



Gain Reduction Meter 1.913.297.00







VU/PPM LED Level Meter Modules

Contents

1	General	2
2	Functional Description	3
3	Technical Specifications.	3
4	Block Diagram	4
	Alignment	

Diagrams	PCB No.	Diagram	Component Layout	Parts List
VU/PPM 30 LED with GRM	1.913.293.00	1.913.293.00	1 012 202 00	1.913.293.00
VU/PPM 30 LED	1.913.294.00	1.913.293.00	1.913.293.00	1.913.294.00
LED PPM Meter (10 LED)	1.913.291.00	1.913.291.00	1.913.291.00	1.913.291.00

Scope of Validity

These instructions apply to the following assemblies:

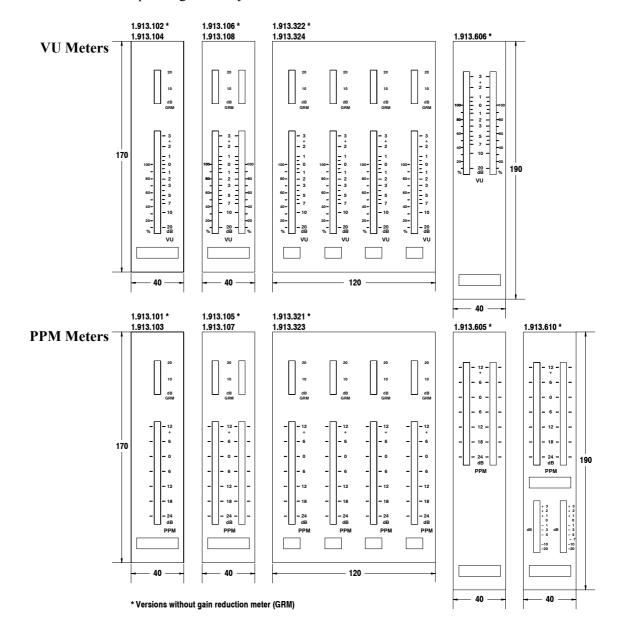
Display	1 Channel, dark front panel	2 Channels, dark front panel	2 Channels, bright front panel	4 Channels, dark front panel	PCB No.
PPM	1.913.101	1.913.105	1.913.605	1.913.321	1.913.294
VU	1.913.102	1.913.106	1.913.606	1.913.322	1.913.294
PPM w. GRM	1.913.103	1.913.107	-	1.913.323	1.913.293
VU w. GRM	1.913.104	1.913.108	-	1.913.324	1.913.293
PPM w. additional small level meter	-	-	1.913.610	-	1.913.294, 1.913.291



1 General

The Level Meter units with 30 LEDs have been developed for installation in the display panel of Studer Mixing Consoles. Instruments with VU (volume unit) and PPM (peak program meter) characteristics, with or without gain reduction meter (GRM) are available. Instead of bar-graph indication, also dot indication is optionally available.

The instruments listed below are equipped with the PCBs 1.913.294 (VU or PPM) or 1.913.293 (VU or PPM with gain reduction meter) according to the table above. Please consult the circuit diagram relating to the corresponding assembly number.



2 VU/PPM Meters 10.27.1481 (0602) Date printed: 12.06.2002



2 Functional Description

PPM: The peak program meter is a quasi-peak value instrument with long decay

time. When a signal voltage corresponding to a level of 0 dB is applied for 10 ms, the resulting indication is –1 dB. Decay time (0 to –20 dB) is 1.7 s.

VU Meter: The VU meter indicates signals according to the standard defined by ANSI

1954. When a signal with a duration of 300~ms is applied, the indication is 99% of the reference value. Rise and decay times on a VU meter are iden-

tical. The factory-set lead is +6 dB.

Gain Reduction Meter: When the limiter/compressor is switched on, the GRM indicates the magni-

tude of the gain reduction.

Small PPM: The assembly 1.913.610 contains an additional small PPM meter with 10

LEDs, normally used for AUX level indication.

Bar/Dot Display Selection: On each of the PCBs, selection of bar or dot display mode is provided. All level meters are factory-set to bar display mode; dot display mode is un-

usual and recommended only if extra-low current consumption is required.

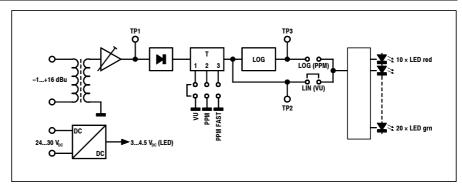
PCB No.	Bar Display Mode (Default Factory Setting)	Dot Display Mode
1.913.293.00	insert: R3, R8, R10, R15	insert: R4, R9, R11, R14
(VU/PPM 30 LED w. GRM)	remove: R4, R9, R11, R14	remove: R3, R8, R10, R15
1.913.294.00	insert: R3, R8, R10	insert: R4, R9, R11
(VU/PPM 30 LED)	remove: R4, R9, R11	remove: R3, R8, R10
1.913.291.00 (PPM 10 LED)	insert jumper JS201	remove jumper JS201

3 Technical Specifications

General:	0 dBu ≙ 0.775 V _{rms}						
	Sensitivity for reference indication	1 dBu +16 dBu					
	Input impedance		>10 kΩ				
	Supply	-	±15 V _{DC}	+24 V _{DC}			
	Current consumption without	Quiescent:	45 mA	35 mA			
	GRM (p. ch., bar display mode)	Full load:	80 mA	80 mA			
	Current consumption with GRM	Quiescent:	55 mA	45 mA			
	(p. ch., bar display mode)	Full load:	105 mA	105 mA			
VU Meter (1.913.293):	Indication range	-	-20 VU +3 VU				
	Accuracy (conditions: -10+3 VU, 0+50° C, 31.5 Hz16 kHz)	± 1 segment					
	Response time to -1 VU	207 ms ±30 ms					
PPM (1.913.293):	Indication range	-3	−30 dBu +15 dBu				
	Accuracy (conditions: -30+15 VU, 0+50° C,	± 1 segment					
	31.5 Hz16 kHz)						
	Dynamic behavior						
	Jumper "normal" 0 dB, 10 ms burst	Indication:		±0.5 dB			
	0 dB, 3 ms burst	Indication:		±1 dB			
	Jumper "fast" 0 dB, 100 µs burst	Indication:		dB			
	Decay time: 020 dB		1.7 s ±0.3 s control: 0 V +2				
GRM (1.913.294):	Input voltage range	min. e max. e					
Dimensions:	1- and 2-channel units, dark front panel	$(w \times h \times d)$	40 × 170	× 97 mm			
	2-channel units, bright front panel (w ×	h × d)	40 × 190	× 97 mm			
	4-channel units, dark front panel (w × h	× d)	120 × 170) × 97 mm			



4 VU/PPM Meter Block Diagram



VU/PPM meter block diagram: VU/PPM/PPM FAST and LIN/LOG settings are established with jumpers J2 and J3, respectively.

5 Alignment

Required Instruments: AC voltmeter, $R_i \ge 20 \text{ k}\Omega$

DC voltmeter, $R_i \ge 100 \text{ k}\Omega$

AF generator, 31.5 Hz ... 16 kHz, 0...16 dBu; attenuator with 10 dB incre-

ments.

DC/DC Converter Check: Con

Connect DC voltmeter to TP5 (hot) and TP4 (ground). Feed generator out-

put signal with line level (-1...+16 dBu) to the input (pins 5 and 7 of P1, or

TP8 and TP9); all green LEDs are on. DC voltmeter reading should be:

 $3.1 \pm 0.1 \text{ V}_{DC}$ (supply: +24 V_{DC}),

 $4.1 \pm 0.1 \text{ V}_{DC}$ (supply: +30 V_{DC}).

Input Range:

Feed generator output signal with line level (1 kHz, -1...+16 dBu) to the

input (pins 5 and 7 of P1, or TP8 and TP9).

Connect AC voltmeter to test points TP1 (hot) and TP4 (ground). Reading must be adjustable with RA3 to 290 ± 10 mV_{AC} for the complete input level

range.

Line Level:

Feed generator output signal with your line level (1 kHz, range:

-1...+16 dBu) to the input (pins 5 and 7 of P1, or TP8 and TP9).

Adjust RA3 until all green LEDs are on. The red LEDs must be dark.

(TP3: $2.5 \pm 0.1 \text{ V}_{DC}$).

Rectifier and Indication:

Set J2 to VU, J3 to LIN.

Feed generator output signal with your line level (1 kHz, usually 0 dBu) to

the input (pins 5 and 7 of P1, or TP8 and TP9).

Connect AC voltmeter to test points TP1 (hot) and TP4 (ground). Adjust

with RA3 to 290 ± 10 mV_{AC}. All green LEDs must be on.

Connect DC voltmeter to test points TP2 (hot) and TP4 (ground); the meter

should read $-380 \pm 15 \text{ mV}_{DC}$.

Connect DC voltmeter to test points TP3 (hot) and TP4 (ground); the meter

should read $\pm 2.575 \pm 0.100 \text{ V}_{DC}$. All green LEDs must be on.

Check: Set generator output for a DC voltmeter reading of $3.8 \pm 0.1 \text{ V}_{DC}$. All LEDs must be on. Set generator output for a DC voltmeter reading of

 $170 \pm 20 \text{ mV}_{DC}$. Only the lowest LED must be on.

4 VU/PPM Meters 10.27.1481 (0602) Date printed: 12.06.2002



Log Converter (PPM only):

Set J2 to PPM, J3 to LOG.

Feed generator output signal (1 kHz, +6 dBu) to the input (pins 5 and 7 of P1, or TP8 and TP9).

Connect DC voltmeter to test points TP2 (hot) and TP4 (ground). Adjust with RA3 to $1.18 \pm 0.05 \text{ V}_{DC}$.

RA1 and RA2: Basic setting according to the arrows in the diagram below. Procedure:

- 1. Upper value setting: Adjust with RA2 to 3.06 ± 0.10 V_{DC}. All green LEDs and four red LEDs must be on (+6 dB indication).
- 2. Set generator output to -24 dBu (i.e., attenuate the +6 dBu setting from above by 30 dB).
- 3. Lower value setting: Adjust with RA1 to 560 ± 20 mV_{DC}. Only the four lowest green LEDs must be on (–24 dB indication).
- 4. These two settings are interdependent, therefore repeat steps 1...3 several times.

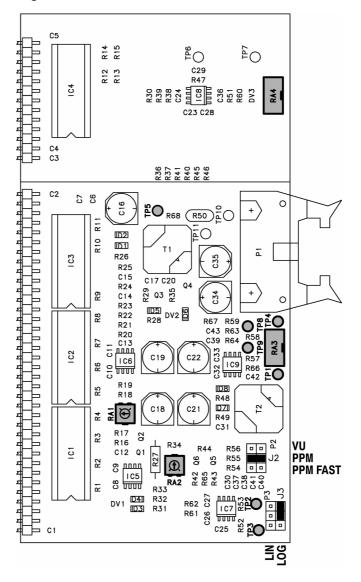
GRM (if included):

Connect the Meter Unit to the console.

Feed a test signal via an input channel. Set the level on the master output to nominal level +20 dB.

Switch the limiter on.

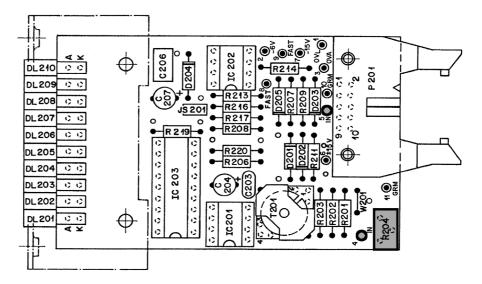
Align with RA4 to a GRM indication of 20 dB.





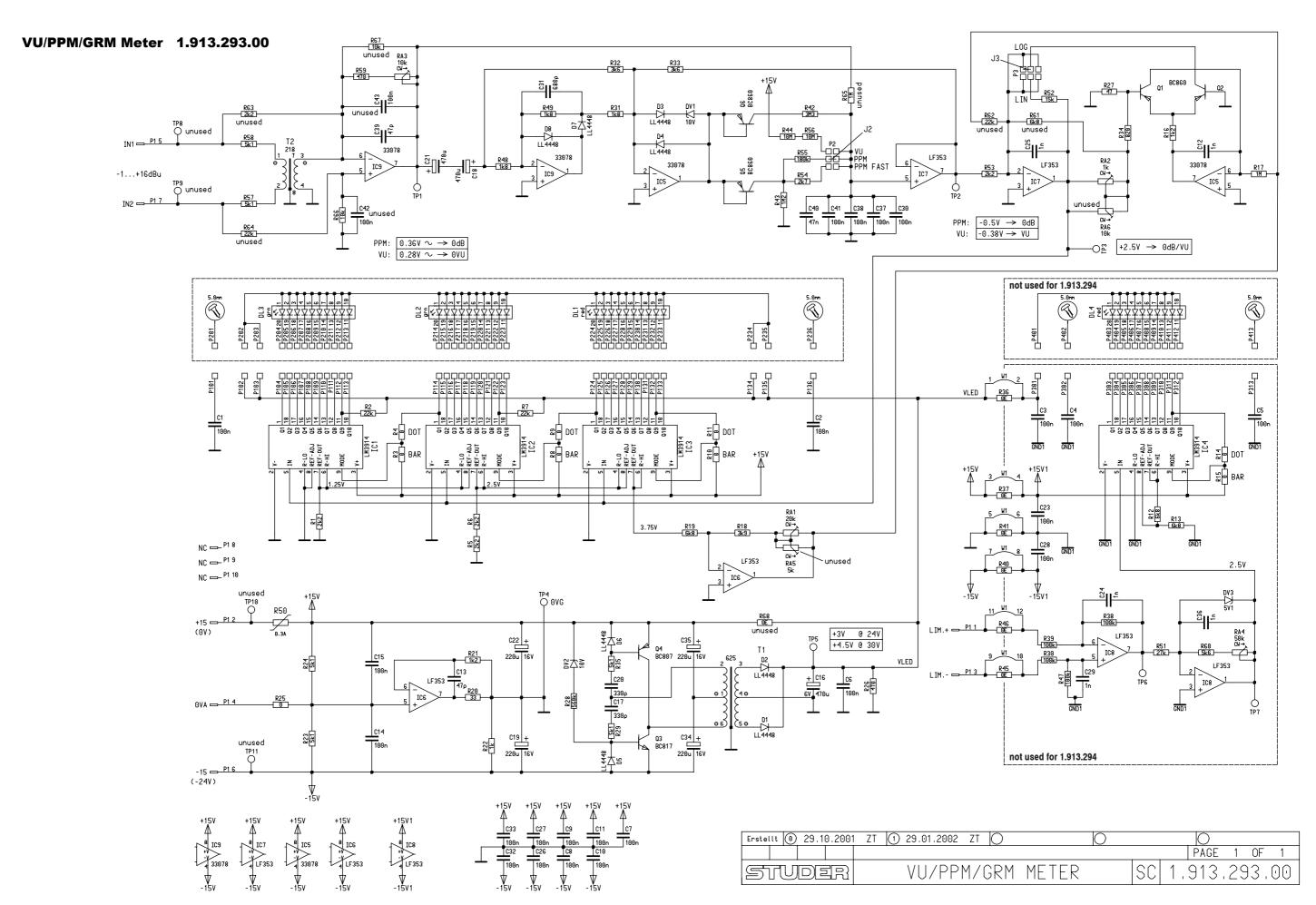
Line Level for 1.913.291:

Feed generator output signal with your line level (1 kHz, range: +6...+15 dBu) to the input (pins 5 and 7 of P201, or TP5 and TP4). Adjust R204 until all green LEDs are on. The red LEDs must be dark.



6 VU/PPM Meters 10.27.1481 (0602) Date printed: 12.06.2002





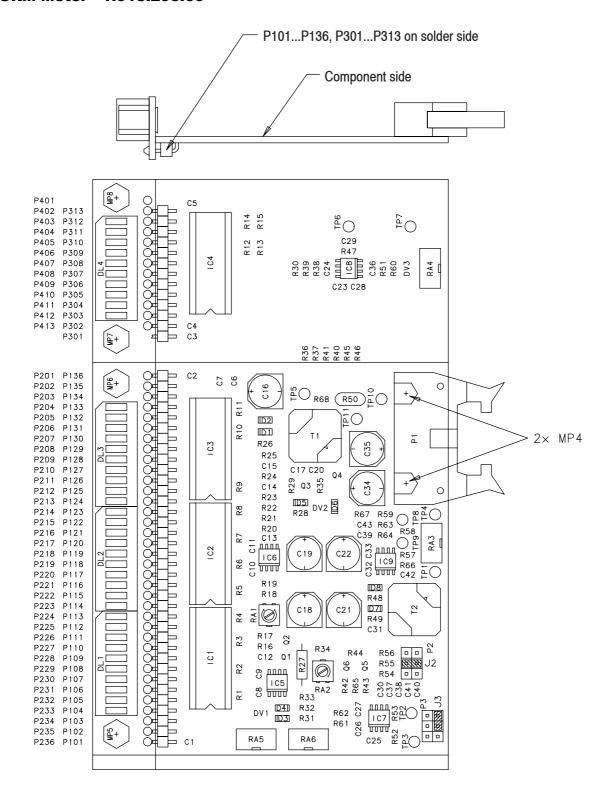
Date printed: 12.06.2002

10.27.1481 (0602)

VU/PPM Meters



VU/PPM/GRM Meter 1.913.293.00



Accompanying documents: Zugehoerige Unterlagen: PL		General tolerance: Freimasstoleranz:	Scale: Massstab:	Edition Ausgabe	29.10.2001 Date Datum	ZT Visa Gez.	ML Checked Gepr.	HW Seen Ges.	0 Index
Substitute for: Ersatz fuer:				Page: Seite		1 ,	/ 1	ues.	
STUDER REGENSDORF	VU/PPM/GR	M METER	, ESE	Z	Number:)13	. 29	3.1	00

VU/PPM Meters 10.27.1481 (0602) Date printed: 12.06.2002



VU/PPM/GRM Meter 1.913.293.00 (4)

Page: 1 of 2

٠٠٠ما	Pos	Dart No.	Otr.	Type/Vel	Description	1.0	, -	los	Dort N-	04.	Tupo//-1	Description
ıax.	Pos.	Part No.	Qty.	Type/Val.	Description		к. Р		Part No.	Qty.	Type/Val.	Description
	C 1	59.60.3337 1		100n	CER 50V, 10%, X7R, 0805	0		124	54.11.0125 54.11.0125		1p 1p	Pin, 1reihig, winkel Pin, 1reihig, winkel
	C 2 C 3	59.60.3337 1 59.60.3337 1		100n 100n	CER 50V, 10%, X7R, 0805 CER 50V, 10%, X7R, 0805		Р	126	54.11.0125		1p	Pin, 1reihig, winkel
	C 4	59.60.3337 1		100n	CER 50V, 10%, X7R, 0805	0		127	54.11.0125		1p	Pin, 1reihig, winkel
	C 5	59.60.3337 1		100n	CER 50V, 10%, X7R, 0805			128	54.11.0125 54.11.0125		1p 1p	Pin, 1reihig, winkel Pin, 1reihig, winkel
	C 6 C 7	59.60.3337 1 59.60.3337 1		100n 100n	CER 50V, 10%, X7R, 0805 CER 50V, 10%, X7R, 0805	0		130	54.11.0125	1 pce	1p	Pin, 1reihig, winkel
0	C 8	59.60.3337 1	рсе	100n	CER 50V, 10%, X7R, 0805	0		131	54.11.0125		1p	Pin, 1reihig, winkel Pin, 1reihig, winkel
	C 9	59.60.3337 1		100n	CER 50V, 10%, X7R, 0805	0		133	54.11.0125 54.11.0125		1p 1p	Pin, 1reilig, winkel
	C 10 C 11	59.60.3337 1 59.60.3337 1		100n 100n	CER 50V, 10%, X7R, 0805 CER 50V, 10%, X7R, 0805	0		134	54.11.0125	1 pce	1p	Pin, 1reihig, winkel
0	C 12	59.60.2373 1	рсе	1 n0	CER 50V, 5%, C0G, 0805	0		135	54.11.0125 54.11.0125		1p 1p	Pin, 1reihig, winkel Pin, 1reihig, winkel
	C 13 C 14	59.60.2241 1 59.60.3337 1		47p 100n	CER 50V, 5%, C0G, 0603 CER 50V, 10%, X7R, 0805	0		301	54.11.0125		1p	Pin, 1reinig, winkel
	C 15	59.60.3337 1		100n	CER 50V, 10%, X7R, 0805	0		302	54.11.0125		1p	Pin, 1reihig, winkel
	C 16	59.68.0033 1		470u	EL 6V, 8.0*10.7	0		303	54.11.0125 54.11.0125		1p 1p	Pin, 1reihig, winkel Pin, 1reihig, winkel
	C 17 C 18	59.60.2361 1 59.68.0033 1		330p 470u	CER 50V, 5%, C0G, 0805 EL 6V, 8.0*10.7	0		305	54.11.0125		1p	Pin, 1reihig, winkel
	C 19	59.68.0073 1		220u	EL 16V, 8.0*10.7	0		306	54.11.0125		1p	Pin, 1reihig, winkel
	C 20 C 21	59.60.2361 1		330p	CER 50V, 5%, C0G, 0805 EL 6V, 8.0*10.7	0		308	54.11.0125 54.11.0125		1p 1p	Pin, 1reihig, winkel Pin, 1reihig, winkel
	C 22	59.68.0033 1 59.68.0073 1		470u 220u	EL 6V, 8.0*10.7 EL 16V, 8.0*10.7	0		309	54.11.0125	1 pce	1p	Pin, 1reihig, winkel
0	C 23	59.60.3337 1	рсе	100n	CER 50V, 10%, X7R, 0805	0		310	54.11.0125 54.11.0125		1p 1p	Pin, 1reihig, winkel Pin, 1reihig, winkel
	C 24 C 25	59.60.2373 1		1n0	CER 50V, 5%, C0G, 0805 CER 50V, 5%, C0G, 0805	0		312	54.11.0125		1p	Pin, 1reilig, winkel
	C 26	59.60.2373 1 59.60.3337 1		1n0 100n	CER 50V, 5%, COG, 0805 CER 50V, 10%, X7R, 0805			313	54.11.0125		1p	Pin, 1reihig, winkel
	C 27	59.60.3337 1		100n	CER 50V, 10%, X7R, 0805	0		≀1 }2	50.60.1002 50.60.1002		BC860C BC860C	PNP 45V 100mA SOT 23 PNP 45V 100mA SOT 23
	C 28 C 29	59.60.3337 1 59.60.2373 1		100n 1n0	CER 50V, 10%, X7R, 0805 CER 50V, 5%, C0G, 0805	0		3	50.60.0050		BC817-25	NPN 45V 800mA SOT 23
	C 30	59.60.3337 1		100n	CER 50V, 10%, X7R, 0805	0			50.60.1050		BC807-25	PNP 45V 800mA SOT 23
	C 31	59.60.2369 1		680p	CER 50V, 5%, COG, 0805	0	0	16 16	50.60.1002 50.60.1002		BC860C BC860C	PNP 45V 100mA SOT 23 PNP 45V 100mA SOT 23
	C 32 C 33	59.60.3337 1 59.60.3337 1		100n 100n	CER 50V, 10%, X7R, 0805 CER 50V, 10%, X7R, 0805	0	R	: 1	57.60.1222		2k2	MF, 1%, 0204, E24
	C 34	59.68.0073 1		220u	EL 16V, 8.0*10.7	0		12	57.60.1223 57.60.1000		22k 0R0	MF, 1%, 0204, E24 MF, 0204
	C 35	59.68.0073 1		220u	EL 16V, 8.0*10.7 CER 50V, 5%, C0G, 0805	0			not used		0R0	MF, 0204
	C 36 C 37	59.60.2373 1 59.60.3337 1		1n0 100n	CER 50V, 5%, COG, 0805 CER 50V, 10%, X7R, 0805	0			57.60.1222	1 pce	2k2	MF, 1%, 0204, E24
0	C 38	59.60.3337 1	рсе	100n	CER 50V, 10%, X7R, 0805	0			57.60.1222 57.60.1223		2k2 22k	MF, 1%, 0204, E24 MF, 1%, 0204, E24
	C 39 C 40	59.60.2241 1		47p	CER 50V, 5%, C0G, 0603 CER 50V, 10%, X7R, 0805	0			57.60.1000		0R0	MF, 0204, E24
	C 40	59.60.3333 1 59.60.3337 1		47n 100n	CER 50V, 10%, X7R, 0805 CER 50V, 10%, X7R, 0805	0		9	not used		0R0	MF, 0204
	D 1	50.60.8001 1		4448	200mA 75V 4ns SOD 80	0	R	10	57.60.1000 not used		0R0 0R0	MF, 0204 MF, 0204
	D 2 D 3	50.60.8001 1 50.60.8001 1		4448 4448	200mA 75V 4ns SOD 80 200mA 75V 4ns SOD 80	0		12	57.60.1682		6k8	MF, 1%, 0204, E24
	D 4	50.60.8001 1		4448	200mA 75V 4ns SOD 80	0		13	57.60.1682		6k8	MF, 1%, 0204, E24
	D 5	50.60.8001 1		4448	200mA 75V 4ns SOD 80	0		14 15	not used 57.60.1000		0R0 0R0	MF, 0204 MF, 0204
	D 6 D 7	50.60.8001 1 50.60.8001 1		4448 4448	200mA 75V 4ns SOD 80 200mA 75V 4ns SOD 80	0	R	16	57.60.1122		1k2	MF, 1%, 0204, E24
	D 8	50.60.8001 1		4448	200mA 75V 4ns SOD 80	0	R	17	57.60.1105 57.60.1392		1M0 3k9	MF, 1%, 0204, E24 MF, 1%, 0204, E24
	DL 1	50.04.2150 1		MV57164	10*LED-Bargraf rot diffus	0		19	57.60.1682		6k8	MF, 1%, 0204, E24
	DL 2 DL 3	50.04.2161 1 50.04.2161 1		GRN GRN	DLZ MV 54 164,LTA1000G 10*D GN DLZ MV 54 164,LTA1000G 10*D GN	0	R	20	57.60.1330	1 pce	33R	MF, 1%, 0204, E24
0	DL 4	50.04.2150 1	рсе	MV57164	10*LED-Bargraf rot diffus	0		21 22	57.60.1122 57.60.1102		1k2 1k0	MF, 1%, 0204, E24 MF, 1%, 0204, E24
	DV 1 DV 2	50.60.9017 1		10V 10V	5%, 0.2W, SOT 23 5%, 0.2W, SOT 23	0		23	57.60.1512		5k1	MF, 1%, 0204, E24
	DV 3	50.60.9017 1 50.60.9010 1		5V1	5%, 0.2W, SOT 23	0		24	57.60.1512		5k1	MF, 1%, 0204, E24
	DV 4	50.04.1112 1	рсе	5V1	Zener, 5%, 0.5W, DO-35	2		25 26	not used 57.60.1471		0R0 470R	MF, 0204 MF, 1%, 0204, E24
	IC 1 IC 2	50.11.0119 1 50.11.0119 1		LM3914 LM3914	IC LM 3914 N, IC LM 3914 N,	0		27	57.99.0252		47	MF 10%, +4500ppm
	IC 3	50.11.0119 1		LM3914	IC LM 3914 N,	0		28	57.60.1564		560k	MF, 1%, 0204, E24 MF, 1%, 0204, E24
	IC 4	50.11.0119 1		LM3914	IC LM 3914 N,	0		29 30	57.60.1512 57.60.1104		5k1 100k	MF, 1%, 0204, E24 MF, 1%, 0204, E24
	IC 5 IC 6	50.61.0204 1 50.61.0207 1		MC33078 LF353	Dual Op-Amp low noise Dual Op-Amp JFET SO 8	0		31	57.60.1182		1k8	MF, 1%, 0204, E24
3	IC 7	50.61.0209 1	рсе	LF412	Dual Op-Amp JFET SO 8	0		32 33	57.60.1362 57.60.1362		3k6 3k6	MF, 1%, 0204, E24 MF, 1%, 0204, E24
0	IC 8	50.61.0207 1		LF353 MC33078	Dual Op-Amp low poise	0		34	57.60.1821		820R	MF, 1%, 0204, E24
0	J 2	50.61.0204 1 54.01.0021 1		Jumper	Dual Op-Amp low noise 0.63*0.63mm, Au	0		35	57.60.1512		5k1	MF, 1%, 0204, E24
0	J 3	54.01.0021 1	рсе	Jumper	0.63*0.63mm, Au	0		36 37	57.60.1000 57.60.1000		0R0 0R0	MF, 0204 MF, 0204
		I.913.293.11 1 I.913.293.10 1			VU/PPM/GRM METER PCB NRETIKETTE 5 * 20	0		38	57.60.1104		100k	MF, 1%, 0204, E24
0	MP 3	43.01.0108 1		Label	ESE-Warnschild	0		39	57.60.1104		100k	MF, 1%, 0204, E24
	MP 4	28.99.0119 2		140+7 4	ROHRNIETE D 2.5*0.15* 9	0		: 40 : 41	57.60.1000 57.60.1000		0R0 0R0	MF, 0204 MF, 0204
		1.010.057.22 1 1.010.057.22 1		M3*7.4 M3*7.4	Nietmutter sw 6 Nietmutter sw 6	0	R	42	57.60.1335	1 pce	3M3	MF, 1%, 0204, E24
0	MP 7 1	1.010.057.22 1		M3*7.4	Nietmutter sw 6	0		43 44	57.60.1125 57.60.1106		1M2 10M	MF, 1%, 0204, E24 MF, 1%, 0204, E24
0 4	MP 8 1 MP 9	1.010.057.22 1 43.10.0113 1		M3*7.4 D	Nietmutter sw 6 Revisions-Etikette 5mm h'blau	0		45	57.60.1000		0R0	MF, 0204
	P1	54.14.2011 1		10p	Winkelstecker Au	0		46	57.60.1000		0R0	MF, 0204
	P 2	54.11.0136 1	рсе	2*3p	Pin 0.63*0.63, RM2.54	0		1 47 1 48	57.60.1104 57.60.1182		100k 1k8	MF, 1%, 0204, E24 MF, 1%, 0204, E24
	P 3 P 102	54.11.0136 1 54.11.0125 1		2*3p 1p	Pin 0.63*0.63, RM2.54 Pin, 1reihig, winkel	0		49	57.60.1182		1k8	MF, 1%, 0204, E24
	P 103	54.11.0125 1		1p	Pin, 1reihig, winkel	0		50	57.92.7012		0.3A	PTC 60V
	P 104	54.11.0125 1		1p	Pin, 1reihig, winkel	0		51 52	57.60.1273 57.60.1153		27k 15k	MF, 1%, 0204, E24 MF, 1%, 0204, E24
	P 105 P 106	54.11.0125 1 54.11.0125 1		1p 1p	Pin, 1reihig, winkel Pin, 1reihig, winkel	0	R	53	57.60.1222		2k2	MF, 1%, 0204, E24
	P 107	54.11.0125 1		1p	Pin, 1reihig, winkel	0		54 55	57.60.1272		2k7	MF, 1%, 0204, E24
	P 108	54.11.0125 1		1p	Pin, 1reihig, winkel	0		56	57.60.1184 57.60.1106		180k 10M	MF, 1%, 0204, E24 MF, 1%, 0204, E24
	P 109 P 110	54.11.0125 1 54.11.0125 1		1p 1p	Pin, 1reihig, winkel Pin, 1reihig, winkel	0	R	57	57.60.1512	1 pce	5k1	MF, 1%, 0204, E24
0	P 111	54.11.0125 1	рсе	1p	Pin, 1reihig, winkel	0		58	57.60.1512 57.60.1471		5k1 470R	MF, 1%, 0204, E24 MF, 1%, 0204, E24
	P 112	54.11.0125 1		1p	Pin, 1reihig, winkel	0		59 60	57.60.1471 57.60.1562		470R 5k6	MF, 1%, 0204, E24 MF, 1%, 0204, E24
	P 113 P 114	54.11.0125 1 54.11.0125 1		1p 1p	Pin, 1reihig, winkel Pin, 1reihig, winkel	0	R	66	57.60.1103	1 pce	10k	MF, 1%, 0204, E24
0	P 115	54.11.0125 1	рсе	1p	Pin, 1reihig, winkel	0		A 1 A 2	58.60.0121 58.60.0113		20k 1k0	SMD 20%, 0.25W, Cermet SMD 20%, 0.25W, Cermet
	P 116 P 117	54.11.0125 1 54.11.0125 1		1p 1n	Pin, 1reihig, winkel Pin, 1reihig, winkel	0	R	A 3	58.01.9103		10k	Cermet, 10%, 0.5W, vertical
	P 117	54.11.0125 1		1p 1p	Pin, Treinig, winkel Pin, 1reihig, winkel	0		A 4	58.01.9503	1 pce	50k	Cermet, 10%, 0.5W, vertical
0	P 119	54.11.0125 1	pce	1p	Pin, 1reihig, winkel	0			1.022.625.00 1.022.218.00		1:1	SCHALTTRAFO 3:1 EINGANGSTRAFO 1:1
	P 120 P 121	54.11.0125 1 54.11.0125 1		1p 1p	Pin, 1reihig, winkel Pin, 1reihig, winkel	0	Т	P 1	54.02.0471	1 pce		Stift d 1.5 * 5.5 löt
0	P 122	54.11.0125 1	pce	1p	Pin, 1reihig, winkel	0) T	P 2 P 3	54.02.0471 54.02.0471			Stift d 1.5 * 5.5 löt
0	P 123	54.11.0125 1	pce	1p	Pin, 1reihig, winkel		T		54.02.0471			Stift d 1.5 * 5.5 löt Stift d 1.5 * 5.5 löt
										- 1		

Page: 2 of 2



VU/PPM/GRM Meter 1.913.293.00 (4)

 Idx. Pos.
 Part No.
 Qty.
 Type/Val.
 Description

 0
 TP 5
 54.02.0471 | pce |
 Stift d 1.5 * 5.5 löt

 0
 TP 6 | not used 1 pce |
 Stift d 1.5 * 5.5 löt

 0
 TP 7 | not used 1 pce |
 Stift d 1.5 * 5.5 löt

End of List

Comments:

(01) Offset-voltage of IC 9 LF 353 too large ->replaced by MC (02) RC5 not used (03) IC7 LF353 replaced by LF412 (04) DV4 added



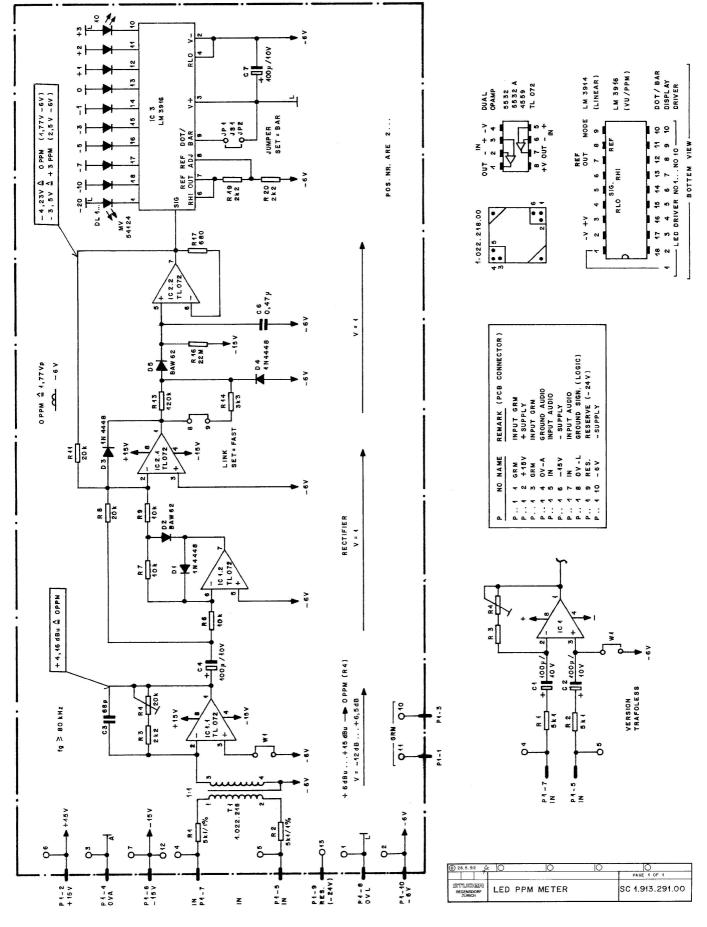
VU/PPM Meter mod. 1.913.294.00 (3)

Page: 1 of 1

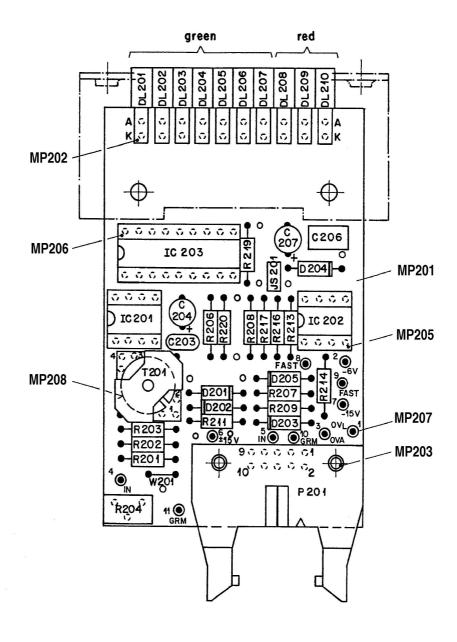
Page: 1 of 2
scription
45V 100mA SOT 23
9 45V 100mA SOT 23 N 45V 800mA SOT 23
45V 800mA SOT 23
9 45V 100mA SOT 23
45V 100mA SOT 23
1%, 0204, E24 1%, 0204, E24
0204
0204
1%, 0204, E24 1%, 0204, E24
1%, 0204, E24
0204
0204 0204
0204
1%, 0204, E24
1%, 0204, E24 1%, 0204, E24
1%, 0204, E24 1%, 0204, E24
1%, 0204, E24
1%, 0204, E24
1%, 0204, E24 1%, 0204, E24
1%, 0204, E24
0204
1%, 0204, E24 10%, +4500ppm
1%, 0204, E24
1%, 0204, E24
1%, 0204, E24 1%, 0204, E24
1%, 0204, E24 1%, 0204, E24
1%, 0204, E24
1%, 0204, E24
1%, 0204, E24 1%, 0204, E24
1%, 0204, E24
1%, 0204, E24
1%, 0204, E24 C 60V
1%, 0204, E24
1%, 0204, E24
1%, 0204, E24
1%, 0204, E24 1%, 0204, E24
1%, 0204, E24
1%, 0204, E24
1%, 0204, E24 1%, 0204, E24
D 20%, 0.25W, Cermet
D 20%, 0.25W, Cermet
met, 10%, 0.5W, vertical HALTTRAFO 3:1
GANGSTRAFO 1:1
d 1.5 * 5.5 löt
: d 1.5 * 5.5 löt : d 1.5 * 5.5 löt
d 1.5 * 5.5 löt
d 1.5 * 5.5 löt

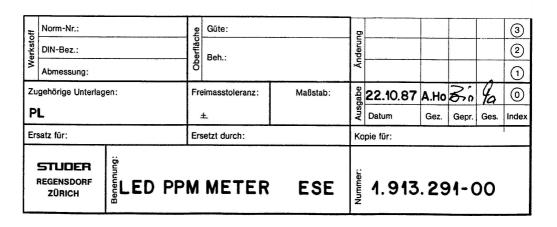


LED PPM Meter (10 LED) 1.913.291.00



LED PPM Meter (10 LED) 1.913.291.00







LED PPM Meter (10 LED) 1.913.291.00 (1)

Page: 1 of 1

ldx.	Pos.	Part No. Qty.	Type/Val.	Description	ldx. Pos.	Part No.	Qty.	Type/Val.	Description
0	C 201	not used	not used	not used					
0	C 202	not used	not used	not used					
0	C 203	59.34.2680	68p	CER 63V, 5%, N150					
0	C 204	59.22.3101	100u	EL 10V 20% RM5					
0	C 205	not used	not used	not used					
	C 206	59.06.5474	470n	PETP, 63V, 5%, RM5					
	C 207	59.22.3101	100u	EL 10V 20% RM5					
0	D 201	50.04.0125	1N4448	75V, 150mA, 4ns, DO-35					
0	D 202	50.04.0132	BAW62	D BAW 62					
1	D 203	50.04.0125	1N4448	75V, 150mA, 4ns, DO-35					
1	D 204	50.04.0125	1N4448	75V, 150mA, 4ns, DO-35					
0	D 205	50.04.0132	BAW62	D BAW 62					
0	D 206	not used	not used	not used					
0	DL 201	50.04.2146	MV54124A	LED green					
0	DL 202	50.04.2146	MV54124A	LED green					
0	DL 203	50.04.2146	MV54124A	LED green					
0	DL 204	50.04.2146	MV54124A	LED green					
0	DL 205	50.04.2146	MV54124A	LED green					
0	DL 206	50.04.2146	MV54124A	LED green					
0	DL 207	50.04.2146	MV54124A	LED green					
0	DL 208	50.04.2119	MV57124A	LED red					
0	DL 209	50.04.2119	MV57124A	LED red					
0	DL 210	50.04.2119	MV57124A	LED red					
0	IC 201	50.09.0101	TL072	Dual op-amp biFET					
0	IC 202	50.09.0101	TL072	Dual op-amp biFET					
0	IC 203	50.11.0144	LM3916	LED Bar/Dot driver					
0	JP 201	54.01.0020	1p	Pin, 1reihig, gerade					
0	JP 202	54.01.0020	1p	Pin, 1reihig, gerade					
0	JS 201	54.01.0021	Jumper	0.63*0.63mm, Au					
	MP 201	1.913.290.11 1 pce		LED METER PCB					
	MP 202	1.010.012.50 10 pcs		LED-spacer universal					
0	MP 203	28.99.0119 2 pcs		ROHRNIETE D 2.5*0.15* 9					
	MP 204	not used .	not used	not used					
	MP 205	53.03.0166 2 pcs	8p	DIL-socket 0.3"					
0	MP 206	53.03.0175 1 pce	18p	DIL 0.3", löt, gerade					
	MP 207	54.02.0471 11 pcs		Stift d 1.5 * 5.5 löt					
	MP 208	1.010.004.61 1 pce	RM5	Isolierscheibe d=10					
	P 201	54.14.2011	10p	Winkelstecker Au					
	R 201	57.11.3512	5k1	MF, 1%, 0207					
0	R 202	57.11.3512	5k1	MF, 1%, 0207					
0	R 203	57.11.4222	2k2	MF, 2%, 0207					
	R 204	58.01.9203	20k	Cermet, 10%, 0.5W, vertical					
0	R 205	not used	not used	not used					
			replaced by W 20	1					
0	R 206	57.11.4103	10k	MF, 2%, 0207					
0	R 207	57.11.4103	10k	MF, 2%, 0207					
0	R 208	57.11.3203	20k	MF, 1%, 0207					
0	R 209	57.11.4103	10k	MF, 2%, 0207					
0	R 210	not used	not used	not used					
0	R 211	57.11.3203	20k	MF, 1%, 0207					
0	R 212	not used	not used	not used					
			replaced by D 203	}					
0	R 213	57.11.4823	82k	MF, 2%, 0207					
0	R 214	57.11.4332	3k3	MF, 2%, 0207					
0	R 215	not used	not used	not used					
			replaced by D 205	i					
	R 216	57.11.6226	22M	MF, 10%, 0207					
	R 217	57.11.4681	680R	MF, 2%, 0207					
0	R 218	not used	not used	not used					
0	R 219	57.11.4222	2k2	MF, 2%, 0207					
0	R 220	57.11.4222	2k2	MF, 2%, 0207					
0	R 221	not used	not used	not used					
0	T 201	1.022.218.00	1:1	EINGANGSTRAFO 1:1					
		1.010.321.64	RM5.0	U shaped wire 0.6mm					
0	W 201								

Comments:

(01) D203, D204 changed

Bargraph Display

^ I I -	
Contents	page

2. Technical Data	4
3. Alignments and Settings	6
3.1 Adjustments	6
3.2 Connections	7
3.3 Function Settings	9
4. Block Diagram1	0
5. Schematics 1	1

REFERENCE

This manual refers to the following units:

Dual Bar Graph PPM	1.913.111
Dual Bar Graph VU	1.913.112
8 Channel Bar Graph PPM	1.913.411
8 Channel Bar Graph VU	1.913.412

EDITION: 3. Januar 1990 10.27.1441 (Ed. 0791)

1. Technical Description

The output meter, whatever it may be called, is one of the most important tools in audio engineering. Wherever audio signals are being processed, it is an essential, because the output level is an important criterion. On the one hand, maximum output level is needed for achieving the best signal-to-noise ratio, on the other hand the reference level should not be exceeded, particularly in digital recordings, otherwise distortion will increase dramatically.

Two types of output meters with different dynamic characteristics have proven themselves useful in recording studios:

Volume Unit Meter (VU)

The most frequently used instrument for measuring audio frequency signal levels is the VU-meter. In the ANSI standard (American National Standards Institute, Inc.), the mechanical and electrical behavior of the VU-meter was already defined in 1954. The rule is that the indication shall be 99% of the ultimate value (0 VU) when a signal of 0.3 s (300 ms) duration is applied. The overshooting of the indication shall be between 1...1.5%. The rise and decay time are identical in the VU-meter.

In the conventional version a VU-meter consists of a suitable moving coil instrument and a full-wave rectifier connected to the input.

Peak Program Meter (PPM)

The PPM is a more recent instrument. Its behavior is defined in the applicable DIN or IEC standards. The principal difference to the VU-meter is in the integration time: the PPM is a quasi peak value instrument with a long release time. A peak value will be indicated even for very short peaks in a music program.

If a sine wave voltage is applied for 10 ms that yields a level of 0dB, the indication should be -1dB. A release time of 1.7 s is desired for levels down to -20dB (IEC).

Instrument Types

An advanced alternative to electromechanical analog displays are the gas discharge bargraph displays. Neon gas that is induced to glow between two glass plates emits visible light. The plasma display has some decisive advantages over all the other displays. For example: large reading angle and high contrast combined with low power consumption and long life. Its disadvantages are: high anode voltage (250 V), high price, and sophisticated electronic circuitry. Despite these drawbacks this excellent type of display has become the de–facto standard in professional studio applications.

Implementation of the Studer Bargraph Output Meters

The design specifications for a precision metering instrument that would not be too costly but still have a modular design resulted in the following arrangement; two individual circuit boards, one for the two-channel signal processing paths and one for the digital section with the switching power supply. In this way it became feasible to achieve a modular design: four signal modules for eight channels but only one digital module.

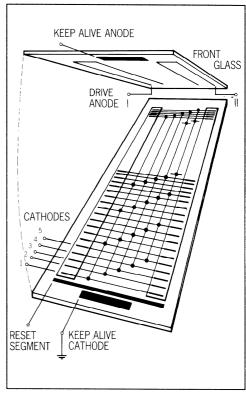
EDITION: 2. Juli 1991

The operating principle of the individual elements that make up the bargraph display is depicted in the following picture:

Plasma Tube

After the 250 VDC supply voltage has been applied, a continuous glow discharge is triggered between the preionization anode and cathode. Since the area around the pre-ionization segment is not physically isolated from the neighboring segments, the charge carriers diffuse into the area of the reset cathode. When the latter is energized first, a glow discharge occurs also here. The same effect causes the first segment to light up (ignite), if the reset cathode is switched off while cathode 1 is switched on. Although each 5th segment is electrically interconnected, only the lowest one glows because sufficient charge carriers are located in its vicinity.

The cathodes 1-2-3-4-5 / 1-2-3-4...etc. are now controlled in this order. The glow discharge migrates segment by segment to the last segment. A new cycle is then initiated by means of the reset segment.



Plasma tube

The length of the bargraph is controlled by the power-on duration of the corresponding anode while the cathodes are controlled cyclically in the dark segment. This design requires only 8 connections or driver stages (2 anodes, 1 reset cathode and 5 write cathodes) for controlling the 2 x 200 segments. In order to create a flicker-free bargraph the refresh rate must be at least 70 Hz. Unnoticeable to the viewer is, however, that only one segment glows at any one moment!

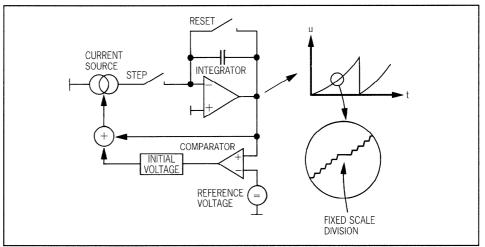
Analog Electronics

The audio section is shown in the block diagram (see p.12). The isolated AF signal is taken to the level stage; the large working range permits the connection of almost any level. For very small levels a +20 dB amplifier is provided. The low-pass filter of the 3rd order attenuates frequencies of over 20 kHz. This circuit is followed by a sophisticated rectifier stage that compensates very carefully with respect to the offset voltages.

For the VU representation, the rectified signal is fed to a filter that duplicates the characteristic of mechanical moving coil instruments. For the PPM representation, the peak value of the rectified signal is formed.

Digital Electronics

The digital section performs various functions. Not only does it process the signals for the plasma tube, it also is responsible for generating the ramp. A totally new approach has been selected for the ramp generation. Normally the audio signal is converted to logarithmic characteristic in an amplifier in order to achievedB representation. The resulting signal is subsequently compared with a time-linear ramp. However, the same can be accomplished by comparing the linear AF signal with an exponential ramp, without the typical problems of a logarithmic circuit (temperature dependence, offset). In addition, more instruments can be controlled by means of a ramp (in the digital section); no logarithmic circuits are required.



Ramp generator

While a capacitor is charged with a constant current, the terminal voltage rises linearly. If this source is equipped with a positive feedback that converts the continually rising voltage to a continually increasing current, we obtain an exponentially progressing terminal voltage.

If the capacitor is discharged after a while, the initial voltage for starting the cycle is missing. A control circuit is available that prepares the initial voltage in such a way that a reference value is achieved after a certain time.

For inserting fixed scale divisions, the capacitor charging is interrupted during three cycle units. As a result the corresponding segment glows three times longer and consequently appears to be brighter.

By disconnecting the above mentioned positive feedback, the linear ramp is again obtained for representing VU values or representable DC values.

The ramp oscillator also supplies the input signal for a binary counter that increments until reset. The outputs of the counter are address lines for an EPROM which generates the 5-phase signal and a reset signal for creating the fixed scale divisions as well as a reset signal for the counter. With the two remaining address lines it is possible to insert different scale divisions.

Future Application

The new bargraph instrument also features a LED column for indicating limiter or compressor gain reduction signals. With the externally controllable selection of VU or PPM characteristic it is also possible to display DC voltages on linear or logarithmic scale. The built-in switching power supply supports a large range of DC supply voltages.

For PCM recordings a faster response time (t = 0.1 ms) may be selected by a switch.

2. Technical Data

PEAK PROGRAM METER SPECIFICATION

Reference Indication 0 dB = 0 dBu + 15 dBu

Indicating Range + 5 dB - 40 dB

Error \pm 0.2 dB (\pm 2 segments) within + 5 dB and - 40 dB

Frequency Response ± 0.5 dB between 31.5 Hz and 16 kHz at 0° C 50° C

Dynamic Response according to IEC publication 268-10 1974:

SINGLE BURST	FREQUENCY	DEFLECTION SLOW VALUE TOLERANCE		DEFLECTION FAST
10 ms	3 kHz	- 1 dB	± 0.5 dB	-0,3 dB
5 ms	3 kHz	- 2 dB	± 1 dB	-0,6 dB
3 ms	3 kHz	- 4 dB	± 1 dB	-0,8 dB
0.4 ms	10 kHz	- 15 dB	± 3 dB	-1,0 dB

Overswing none

Return Time 0 dB - 20 dB: 1.7 ± 0.3 seconds

VU-METER SPECIFICATION

Reference Indication $0 \text{ VU} = -4 \text{ dBu} \dots + 11 \text{ dBu}$

Indicating Range + 3 VU - 20 VU, voltage linear

Frequency Response + 1.0/- 0.0 dB at 0 VU and 31.5 Hz; Temperature range 0° C 50° C

Response Time 207 ms (\pm 30 ms) to - 1 VU of reference indication

Overswing 1 ... 1.5 %

Return Time 207 ms (\pm 30 ms).

DC METER SPECIFICATION

Display Range

INDICATION		REVERSE		
TOP END	0 V	0 V	- 1 V	+ 1 V
BOTTOM	+ 10 V	+ 6 V	+ 6 V	- 10 V

There is mutual influence between the alignment of 'Top End' and 'Bottom' indication. The values in the row 'Normal' are ment to be examples for possible settings.

GENERAL SPECIFICATIONS

Input Impedance > 10 kOhm

Source Impedance < 1 kOhm

Reversibility Error < 0.5 dB

Temperature Range error ± 0.5 dB in the range - 10° C $+ 60^{\circ}$ C

(reference: 1 kHz at 25° C)

Supply Voltage $24 \text{ V} \dots 34 \text{ V} \text{ (or } \pm 15 \text{ V)}$

Power Consumption dual unit: 3.5 W typ., 5.0 W max.

8 channels: 9.5 W typ., 14.5 W max.

Mechanical Dimensions dual unit: 40 mm(W) x 170 mm(H) x 130 mm(D)

8 channel unit: 160 mm(W) x 170 mm(H) x 130 mm(D)

Weight dual unit: 640 g

8 channel unit: 1600 g

GR METER SPECIFICATION

Input Range $\pm 2 \text{ V} \dots \pm 5 \text{ V}$ for + 20 dB indication

EDITION: 13. Dezember 1989

3. Alignments and Settings

Note: The Analog Print 1.913.117 contains two channels, so each adjustment pot exists twice. All adjustments have to be performed on all channels.

The Digital Print 1.913.118 exists only once per unit, be it a two or eight channel device.

3.1 Adjustments

Level Setting

For adaptation to different line levels only the following adjustment is necessary:

- Feed reference level 1 kHz (e.g. +6 dBu)
- adjust 0 dB indication on bargraph with R 5 (R 105) Potentiometer is marked AUDIO GAIN

Complete Adjustment

In case of part exchange a full adjustment procedure may be necessary. In this case proceed in the following steps:

AC Input:

Set unit to "PPM", "+20 dB off", and "Not fast" (see below)

- Disconnect input, terminate input with 200 Ohm
- adjust minimal level (0 ±1 mV) at pin 7 of IC 6 (internal potentiometer)
- Feed reference level 1 kHz (e.g. +6 dBu)
- adjust 0 dB indication on bargraph with R 5 (R 105).

Potentiometer is marked AUDIO GAIN

- Feed 20 dB below reference level 1 kHz (e.g. -14 dBu)
- adjust -20 dB indication with R 64 (potentiometer on digital print; do not readjust after the first channel has been properly adjusted)
- Feed 30 dB below reference level 1 kHz (e.g. -24 dBu)
- adjust -30 dB indication with R 30 (R 130). Potentiometer is marked AUDIO OFFSET
- Repeat all steps until all indications are correct.

DC Iput: Set unit

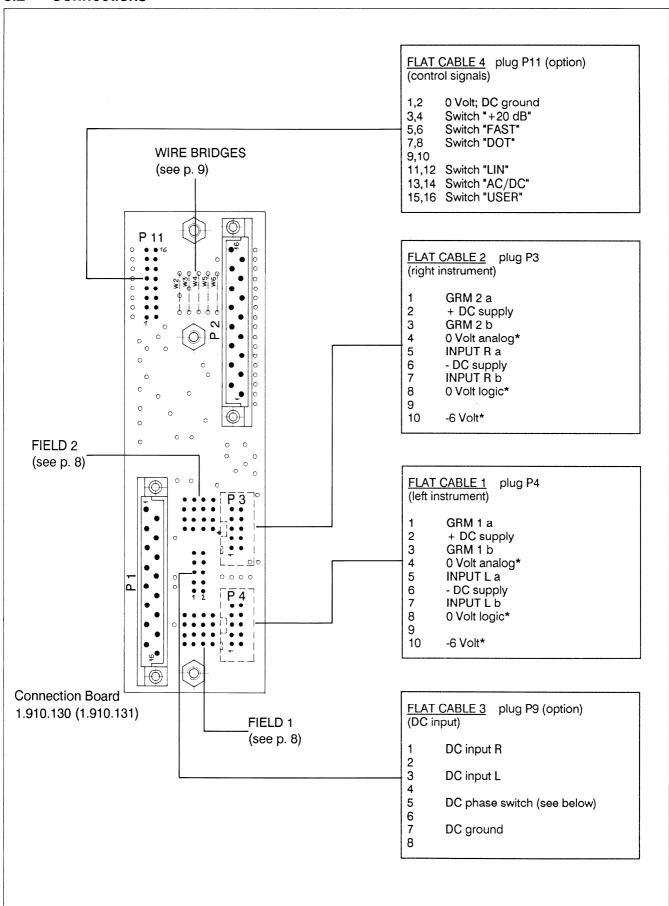
Set unit to "DC" and adjust the wanted input phase configuration (see below).

- Feed maximum DC voltage.
- Adjust maximum indication with R 55 (R 155). Potentiometer is marked DC GAIN
- Feed minimum DC voltage
- Adjust minimum indication with R 63 (R 163). Potentiometer is marked DC REF
- Repeat all steps until all indications are correct.

GRM Input:

- Feed level 1 kHz required for a indication of +20 dB on the gain reduction meter.
- Adjust indication with R 60 (R 160). Potentiometer is marked GRM

3.2 Connections

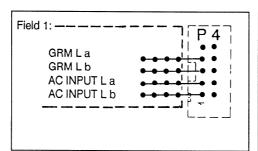


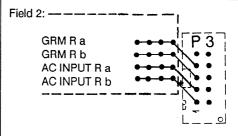
EDITION: 8. Januar 1990

If the unit is powered by an unstabilized DC supply, an additional C may be installed (1000 μ F, 40 Volt, Order No. 59.22.6102).

Signals marked with an asterisk (*) are not required for the bargraph.

The lines carrying the AC bargraph input and the GRM input signals may also be soldered to the unit (instead of feeding those signals via the flat cables; especially useful for operation outside STUDER mixers). The connection points are:





DC Supply

DC can be fed either via flat cable 1 or 2 or directly to the pins marked "+" and "-".

3.3 Function Settings

Some functions can be set both by wire bridges and by external switches. Do not duplicate!

Wire Bridges

BRIDGE	ON	OFF	
W2		•	INSTRUMENT ATTACK TIME 0.1 ms STANDARD ATTACK TIME (10 ms in PPM mode)
W3		•	GRM INDICATION AS SINGLE DOT GRM INDICATION AS BAR
W4			(reserved for future use)
W5 W6			PPM INDICATION
W5 W6	•	•	VU INDICATION
W5 W6		•	DC LOG INDICATION
W5 W6			DC LIN INDICATION

External Switches

"ON" means that either the pin is connected to ground (pin 1/2) or that a TTL low level is connected. "OFF" means that either the switch is open (internal pull-up resistor) or that a TTL high level is connected.

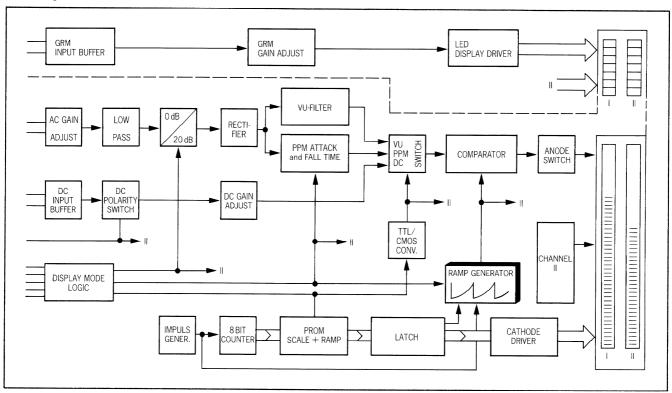
All external switches are connected via flat cable 4 (see above).

PIN	ON	OFF	
1,2			0 VOLT
3,4			AC GAIN +20 dB AC GAIN 0 dB
5,6	=	•	INSTRUMENT ATTACK TIME 0.1 ms STANDARD ATTACK TIME (10 ms in PPM mode)
7,8			GRM INDICATION AS SINGLE DOT GRM INDICATION AS BAR
11,12	•	•	LIN INDICATION (if DC selected), VU INDICATION (if AC selected, see 13/14) LOG INDICATION (if DC selected), PPM INDICATION (if AC selected, see 13/14)
13,14			DC AC
15,16	•	•	USER SWITCH: LED ON FRONT PLATE ON LED ON FRONT PLATE OFF

EDITION: 13. Dezember 1989

4. Block Diagram

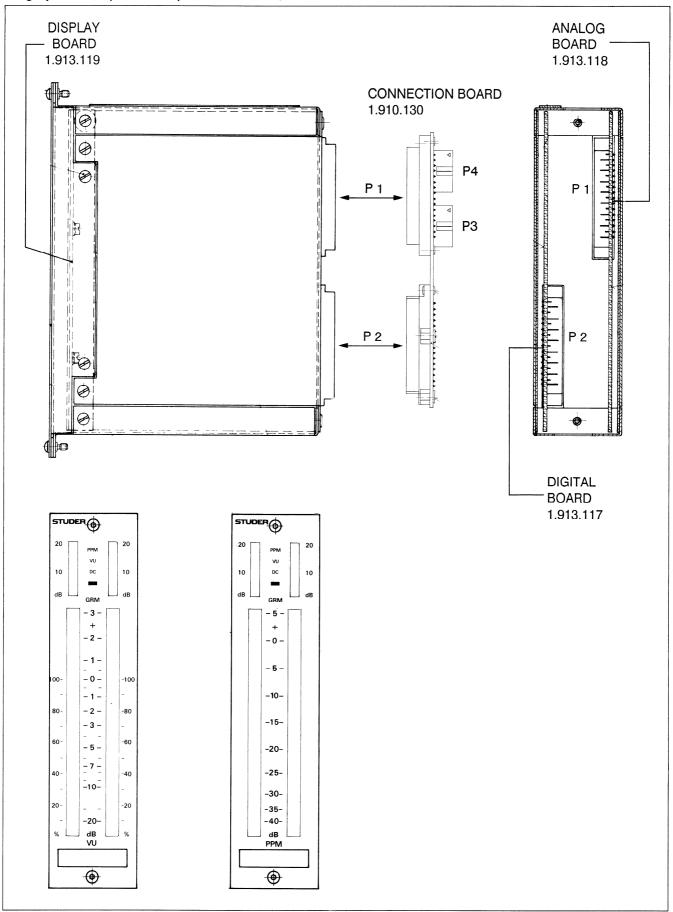
Block Diagram for Channel I



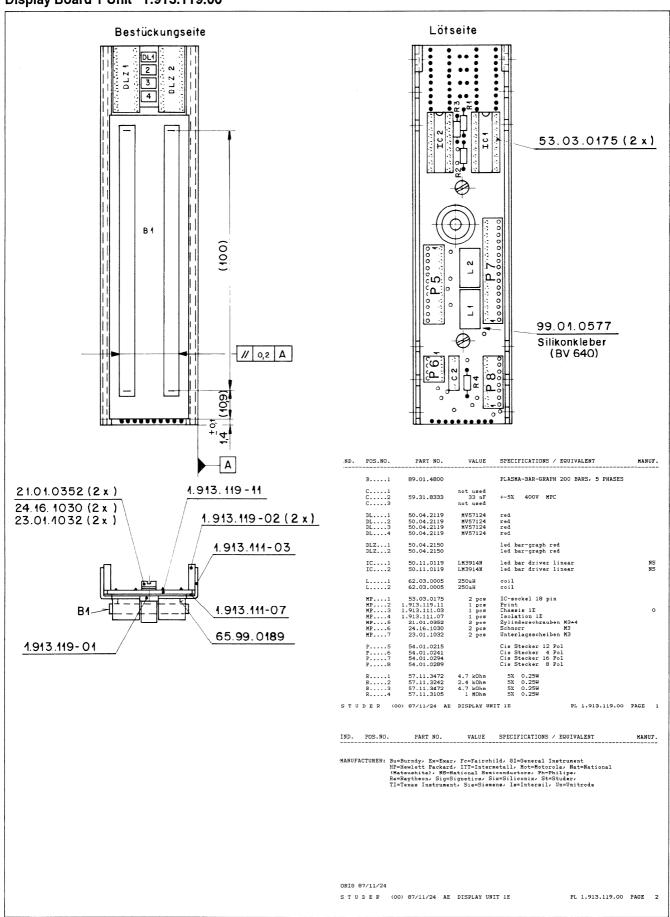
5. SCHEMATICS

۱.	Bar Graph T Unit (VO of PPN)	
	■ General1	.913.111 / 112
	■ Display Board1	.913.119
	■ Connection Board1	.910.130
2.	Bar Graph 4 Units (VU or PPM)	
	■ General1	.913.411 / 412
	Display Board1	.913.419
	■ Connection Board1	.910.131
3.	Dual Bargraph circuit diagram1	.913.111/112
	■ Digital Board (1 Unit and 4 Units)1	.913.117
	 Analog Board (1 Unit and 4 Units) 	.913.118

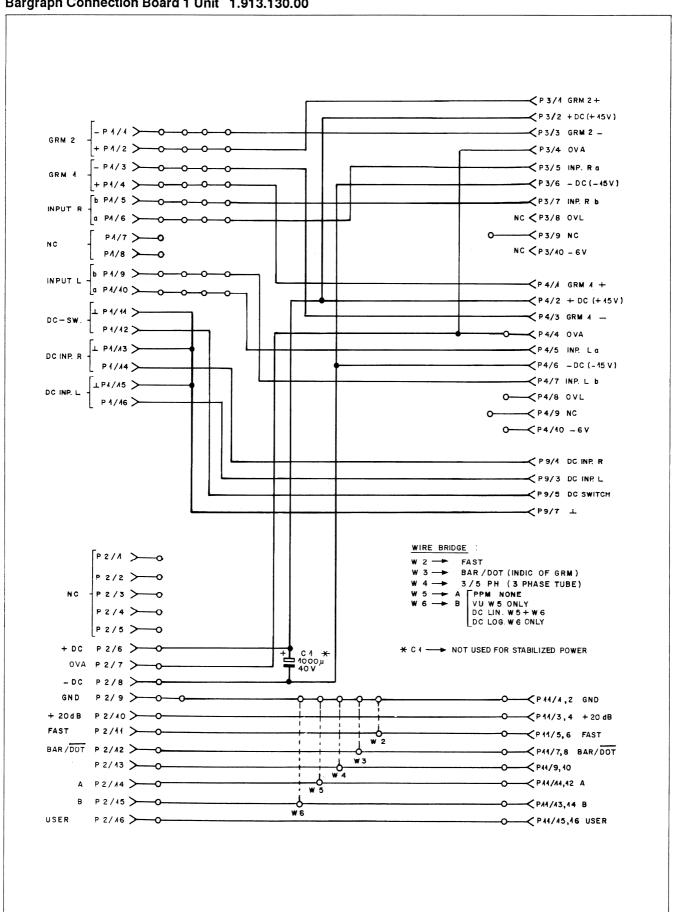
Bargraph 1 Unit (PPM or VU) 1.913.111.81 / 112.81



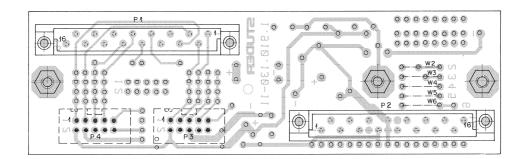
Display Board 1 Unit 1.913.119.00

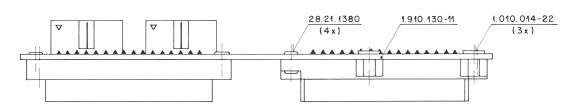


Bargraph Connection Board 1 Unit 1.913.130.00



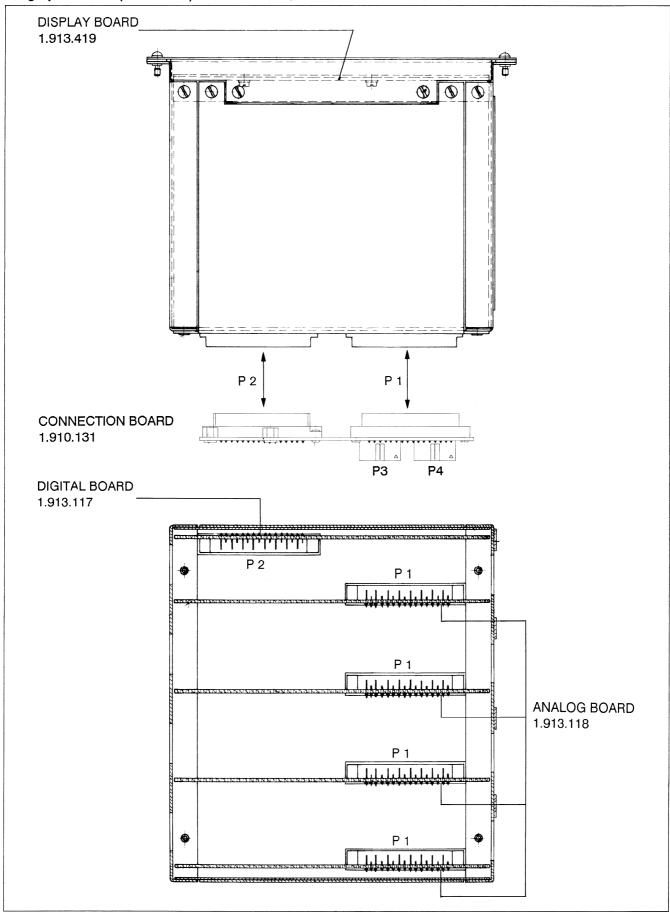
Bargraph Connection Board 1 Unit 1.913.130.00





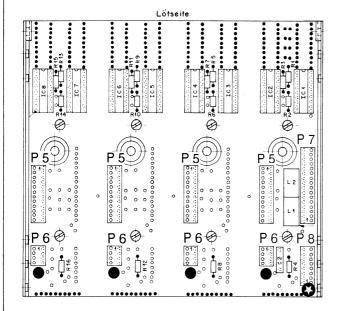
W 2 bis W 6 nach Angabe Studio-Projektierung

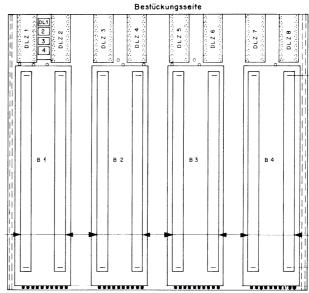
Bargraph 4 Units (PPM or VU) 1.913.411.81 / 412.81



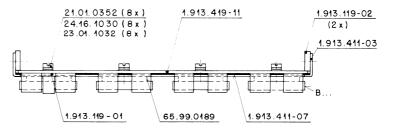
Display Board 4 Units 1.913.419.00

The Display Board 4 Units is adequate to four display boards for one unit each. For details see schematic number 1.913.119.





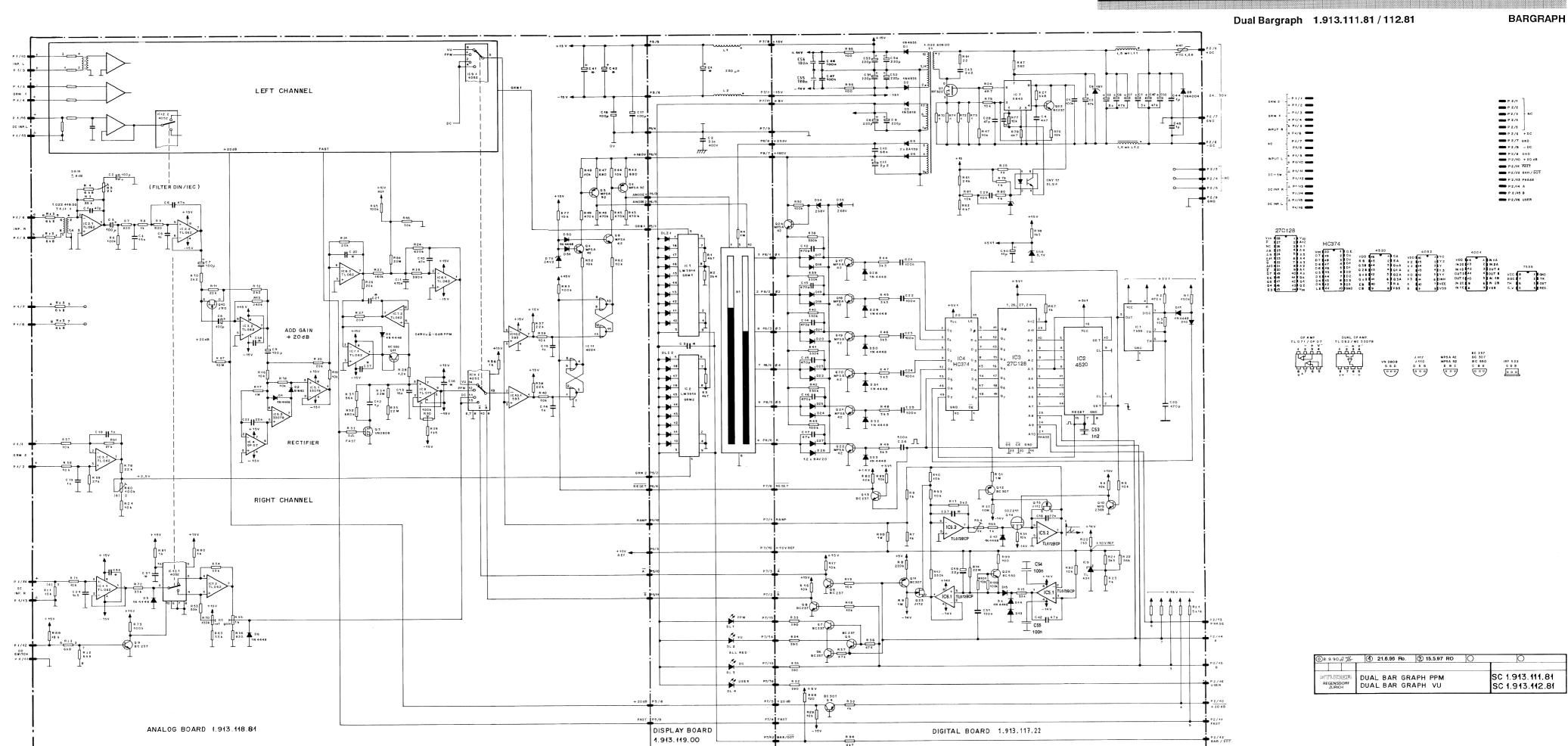
- ANALOG BOARD
 1.913.118
- ODIGITAL BOARD



Bargraph Connection Board 4 Units 1.910.131

This Board combines four connection boards for one unit on a single print. For details please see 'Connection Board 1 Unit 1.910.130'.

D.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALE		MAN	AUF
	B1	89.01.4800		PLASMA-BAR-GRAPH 200 BARS, 5 PHASES			MP3		1 pcs	Chassis 4E			
	B2	89.01.4800		PLASMA-BAR-GRAPH 200 BARS, 5 PHASES			MP4		1 pcs	Isolation 4E			
	В3	89.01.4800		PLASMA-BAR-GRAPH 200 BARS, 5 PHASES			MP5	21.01.0352	2 pcs	Zylinderschrauben M3*4			
	B4	89.01.4800		PLASMA-BAR-GRAPH 200 BARS, 5 PHASES			MP6	24.16.1030	2 pcs	Schnorr M3			
				Tanama ann annan Baa Binkby 5 Innb26			MP7	23.01.1032	2 pcs	Unterlagescheiben M3			
	C1		not used					25.01.1052	2 900	oncerragesonersen no			
	C2	59.31.8333	33 nF	+-5% 400V MPC			P5	54.01.0215		Cis Stecker 12 Pol	4 Stueck		
	C3	37.01.0003	not used	. 34 4007 HIC			P6	54.01.0213			4 Stueck		
	0		not used				P7	54.01.0294			1 Stueck		
	DL1	50.04.2119	MV57124	red			P8	54.01.0294					
	DL2	50.04.2119	HV57124	red			F	54.01.0289		CIR Procket & bot 1	1 Stueck		
	DL3												
		50.04.2119	MV57124	red			R1	57.11.3472	4.7 kOhn	5% 0.25W			
	DL4	50.04.2119	MV57124	red			R2	57.11.3242	2.4 kOhm	5% 0.25W			
							R3	57.11.3472	4.7 kOhm	5% 0.25W			
	DLZ1	50.04.2150		led bar-graph red			R4	57.11.3105	1 MOhm	5% 0.25W			
	DLZ2	50.04.2150		led bar-graph red			R5	57.11.3472	4.7 kOhm	5% 0.25W			
	DLZ3	50.04.2150		led bar-graph red			R6	57.11.3242	2.4 kOhm	5% 0.25W			
	DLZ4	50.04.2150		led bar-graph red			R7	57,11,3472	4.7 kOhm	5% 0.25W			
	DLZ5	50.04.2150		led bar-graph red			R8	57.11.3105	1 MOhm	5% 0.25W			
	DLZ6	50.04.2150		led bar-graph red			R9	57.11.3472	4.7 kOhm	5% 0.25W			
	DLZ7	50.04.2150		led bar-graph red			R10	57.11.3242	2.4 kOhm	5% 0.25W			
	DLZ8	50.04.2150		led bar-graph red			R11	57.11.3472	4.7 kOhm	5% 0.25W			
	222	5010112150		rea bar graph rea			R12	57.11.3105	1 MOhm	5% 0.25W			
	IC1	50.11.0119	LM3914N	led har driver linear	NS		R13	57.11.3472	4.7 kOhm	5% 0.25W			
	IC2	50.11.0119	LM3914N	led bar driver linear			R14	57.11.3242		5% 0.25W			
					NS				2.4 kOhm				
	IC3	50.11.0119	LM3914N	led bar driver linear	NS		R15	57.11.3472	4.7 kOhm	5% 0.25W			
	IC4	50.11.0119	LM3914N	led bar driver linear	N5		R16	57.11.3105	1 MOhm	5% 0.25 W			
	IC5	50.11.0119	LM3914N	led bar driver linear	NS								
	IC6	50.11.0119	LM3914N	led bar driver linear	NS								
	IC7	50.11.0119	LM3914N	led bar driver linear	NS								
	IC8	50.11.0119	LM3914N	led bar driver linear	NS	MANUFA	ACTURER: B	u=Burndy, Ex=Exa:	c, Fc=Fairch	ild, GI=General Instrument			
							H)	P=Hewlett Packar:	1, ITT=Inter	metall, Mot=Motorola, Nat=N	National		
	LI	62.03.0005	250uH	coil						iconductors, Ph=Philips,			
	L2	62.03.0005	250uH	coil						ix=Siliconix, St=Studer,			
							T	ImTevas Instrume	nt, SiemSiem	ens, Is=Intersil, Un=Unitro	ode		
	MP1	53.03.0175	8 рсв	IC-sockel 18 pin			•						
	MP2		1 pcs	Print		OPTG	37/11/24						
		1.715.417.11	T bes	11110		OKIB	11/11/24						
т 11 1	DER ((00) 87/11/24 AE	DISDIAV IIN	IT 4E PL 1.913.419.00	DACE 1	STU	n r b //	00) 87/11/24 AE	DICDIAU IIN	ITT AP DI 1	.913.419.00	DAGE	

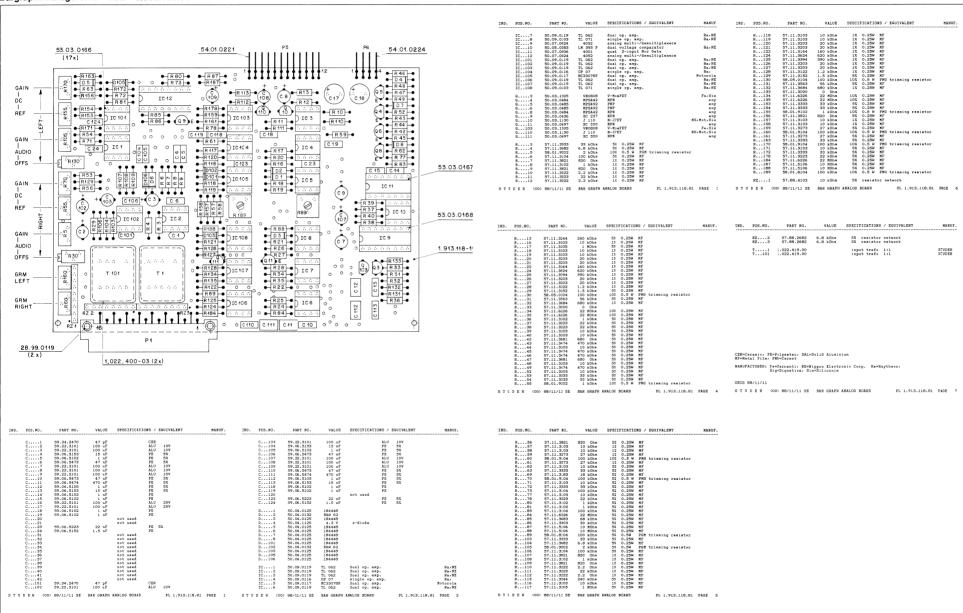




Bargraph Digital Board 1.913.117.21

1.913,117-01 5	54.01.0270			ldx. Pos.	Part No. Qt	y. Type/Val.	Description	ldx. Pos.	Part No. Qty.	. Type/Val.	Description
		50.20.2003		0 D 15	50.04.0125	1N4448	75V, 150mA, 4ns, DO-35	0 R 16	57.11.3103	10k	MF, 1%, 0207
		50.20.0314		0 D 16	50.04.0133	BAV20	D BAV 20, SI	0 R 17	57.11.3103	10k	MF, 1%, 0207
		I		0 D17	50.04.0133	BAV20	D BAV 20 , SI D BAV 20 . SI	0 R 18	57.11.3103	10k	MF, 1%, 0207
1444444 \ \ 0144	+++++++++++++	E.	••••	0 D18 0 D19	50.04.0133 50.04.0133	BAV20 BAV20	D BAV 20 SI	0 R 19	57.11.3103 57.11.3751	10k 750R	MF, 1%, 0207 MF, 1%, 0207
P8 ° ° °	P7 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	₩	-@ [1774]	0 D20	50.04.0133	BAV20	D BAV 20, SI	0 R 21	57.11.3332	3k3	MF, 1%, 0207
P8 0 0/0	0000 0000	0 E0107 P		0 D21	50.04.0133	BAV20	D BAV 20, SI	0 R 22	57.11.3363	36k	MF, 1%, 0207
0	600	~ · · · · · · · · · ·	C54	0 D22	50.04.0133	BAV20	D BAV 20, SI	0 R 23	57.11.3102	1k0	MF, 1%, 0207
0	• • •		231	0 D23	50.04.0133	BAV20	D BAV 20 , SI	0 R 24	57.11.3479	4R7	MF, 1%, 0207
3 3 1		(C7) See 111	1 1 C18	0 D 24 0 D 25	50.04.0133 50.04.0133	BAV20 BAV20	D BAV 20 , SI D BAV 20 . SI	0 R 25 0 R 27	57.11.3102 57.11.3682	1k0 6k8	MF, 1%, 0207 MF, 1%, 0207
• R 29	17 0 C5 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0181818	8 N 5 6 (C 42)	0 D25 0 D26	50.04.0133	BAV20 BAV20	D BAV 20 . SI	0 R 29	57.11.3103	10k	MF, 1%, 0207
€ R30 € C1		+ + + + + + + + + + + + + + + + + + +		53.03.0466 0 D27	50.04.0133	BAV20	D BAV 20, SI	0 R 30	57.11.3102	1k0	MF. 1%, 0207
	71-0 / 5 \	(ce)	• • • • Dirc 5! 1251	(4x) 0 D28	50.04.0125	1N4448	75V, 150mA, 4ns, DO-35	0 R 31	57.11.3103	10k	MF, 1%, 0207
R43	3 • (c3) F•••••		1111	0 D29	50.04.0125	1N4448	75V, 150mA, 4ns, DO-35	0 R 32	57.11.3391	390R	MF, 1%, 0207
a) A D47 A E Y Y	27 E 0 +	321-13R	3	0 D30	50.04.0125	1N4448	75V, 150mA, 4ns, DO-35	0 R 33	57.11.3391	390R	MF, 1%, 0207 MF, 1%, 0207
8 E O+ R49		(, †) TITE		0 D31 0 D32	50.04.0125 50.04.0125	1N4448 1N4448	75V, 150mA, 4ns, DO-35 75V, 150mA, 4ns, DO-35	0 R 34 0 R 35	57.11.3391 57.11.3391	390R 390R	MF, 1%, 0207 MF, 1%, 0207
R 19 E (1+ R 47 C 49 D 25	THE THE THE THE THE THE THE THE THE THE	(c 2)	IC 6 E E	0 D32 0 D33	50.04.0125	1N4448	75V, 150mA, 4ns, DO-35	0 R 36	57.11.3391	47k	MF. 1%, 0207
R35 Q6 G16		C 26	025 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 D34	50.04.1166	68V	Zener, 5%, 0.5W, DO-35	0 R 37	57.11.3473	47k	MF, 1%, 0207
R34 D24	4 - 1 1 1 1 1 1 1	- C25 6 6 6 6	NE E IRSC	0 D 35	50.04.1166	68V	Zener, 5%, 0.5W, DO-35	0 R 38	57.11.3334	330k	MF, 1%, 0207
933 A D22	21 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	33 9 5	0 D36	50.04.1112	5V1	Zener, 5%, 0.5W, DO-35	0 R 39	57.11.3334	330k	MF, 1%, 0207
● R4-	4 • R47 • @ O @ @ @ @ @ @			53.03.0165 0 DLQ	50.04.3200 50.07.0036	CNY17-2 7555	Optc-coupler IC ICM 7555 IPA .A	0 R 40 0 R 41	57.11.3334 57.11.3334	330k 330k	MF, 1%, 0207 MF, 1%, 0207
● R36 ● 07 E D23	3 (019)E	_)	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 IC1 0 IC2	50.07.0036 50.07.0520	7555 4520	IC ICM 7555 IPA ,A Dual 4bit binary counter	0 R41 0 R42	57.11.3334 57.11.3334	330k 330k	MF, 1%, 0207 MF, 1%, 0207
R3/He (C4F	5) • 031	C22	•	0 IC2	1.913.999.22	1020	SW BAR-GRAPH DIGITAL BOARD ,A	0 R 43	57.11.3334	100k	MF, 1%, 0207
R 94 (5 (-C 1 c) D 20	6 • R50 • E		IC4 4	1.913.417-11 0 IC4	50.17.1374	74HC374	IC 74 HC 374 ,A	0 R 44	57.11.3332	3k3	MF, 1%, 0207
D20		(32)	5 5 5 5 5 5 5 6	0 IC 5	50.09.0121	TL072B	IC TL 072 BCP ,A	0 R 45	57.11.3332	3k3	MF, 1%, 0207
RZ 1 5 5		000000	。。。。。。。	0 IC 6	50.09.0121	TL072B	IC TL 072 BCP ,A	0 R 46	57.11.3332	3k3	MF, 1%, 0207
(C14	4) D18 034 D35 C C Punkt		-	0 IC7	50.10.0113	3843	IC IP 3843 N	0 R 47	57.11.3332	3k3	MF, 1%, 0207
	D35	(c31)	1C 3 0 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	0 IC8 0 IC9	50.10.0106 50.10.0106	TL431 TL431	Shunt regulator Shunt regulator	0 R48	57.11.3332 57.11.3332	3k3 3k3	MF, 1%, 0207 MF, 1%, 0207
	D32	(C31) P	P[2]		62.03.0100	1.5mH	2A Toroid Chocke compensated	0 R 50	57.11.3332	100k	MF, 1%, 0207
1 PM 1 1 D19 PT	R39 FaCII		P# 1 _ 3	53.03.0173 0 MP1	1.913.117.12 1 pc		BAR-GRAPH DIGITAL PCB	0 R51	57.11.3105	1M0	MF, 1%, 0207
G (C13	3) Q17) E R45 1 1 29 MN 7 0 P P	(a +) + + + + + + + + + + + + + + + + +	0000000	0 MP 2	1.913.117.04 1 pc	e	NRETIKETTE 5 * 20	0 R 52	57.11.5106	10M	MF, 5%, 0207
	3) Q17) E R42 2) D29 6] R44 8- Q16) E	\C34 /	o ICN	0 MP3	43.01.0108 1 pc	e Label	ESE-WARNSCHILD	0 R 61	57.11.3243	24k	MF, 1%, 0207
D 16	2) • R44 • Q Q Q Q Q		0 (9 0	0 MP4	1.101.001.22		TEXT-ETIK. 5*20 HARDWARE -22	0 R 62	57.11.3472	4k7	MF, 1%, 0207
R97 - R31	18 Q16 E TTT TT	+0 5555	<u> </u>	53.03.0168 0 MP 5	1.913.117.01 1 pc		ABSCHIRMHAUBE ROHRNIETE D 2.5*0.15* 9	0 R 64 0 R 65	58.01.8102 57.11.3102	1k0 1k0	Cermet, 10%, 0.5W, horizontal MF, 1%, 0207
C 44 C 45 PTC • D17	7] • • 1528 •	(°C 33°) DIC+ 8) IC 2 C53	0 MP 6	28.99.0119 2 pc 50.20.0314 1 pc	e TO126	Glimmerscheibe, zu Clip	0 R 65	57.11.3102 57.11.3102	1k0 1k0	MF, 1%, 0207 MF, 1%, 0207
		0 5 5 5 6	00000000000						37.11.3102		
1				0 MP8	50.20.2003 1 pc	e	Morrageclip zu TO 220, N/ISOL.	0 R 70	57.11.3109	1R0	MF, 1%, 0207
	• • • • • • • • • • • • • • • • • • • •	o +(C40)		0 MP8 0 MP9	50.20.2003 1 pc 53.03.0165 1 pc		Morrageclip zu TO 220, N/ISOL. DIL-socket 0.3"	0 R70 0 R71	57.11.3109 57.11.3109	1R0 1R0	MF, 1%, 0207 MF, 1%, 0207
		- R2 → - D10	→ • D36 •	0 MP 9 0 MP 1	53.03.0165 1 pc 53.03.0166 4 pc	e 20p s 8p	DIL-socket 0.3" DIL-socket 0.3"	0 R 71 0 R 72	57.11.3109 57.11.3109	1R0 1R0	MF, 1%, 0207 MF, 1%, 0207
			→ • D36 •	0 MP 9 0 MP 1 0 MP 1	53.03.0165 1 pc 53.03.0166 4 pc 53.03.0168 1 pc	e 20p es 8p ee 16p	DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3"	0 R 71 0 R 72 0 R 73	57.11.3109 57.11.3109 57.11.3109	1R0 1R0 1R0	MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207
		- R2 → - D10	→ • D36 •	0 MP9 0 MP1 0 MP1 0 MP1	53.03.0165 1 pc 53.03.0166 4 pc 53.03.0168 1 pc 53.03.0173 1 pc	e 20p es 8p ee 16p ee 28p	DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL 0.6", löt, gerade	0 R71 0 R72 0 R73 0 R74	57.11.3109 57.11.3109 57.11.3109 57.11.3103	1R0 1R0 1R0 10k	MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207
ф ° 1111111		R2 D40	D36 R3 • C20	0 MP9 0 MP1 0 MP1 0 MP1 0 P2	53.03.0165 1 pc 53.03.0166 4 pc 53.03.0168 1 pc 53.03.0173 1 pc 54.11.2007	e 20p es 8p ee 16p ee 28p 2*8p	DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL 0.6", löt, gerade EU-BK 2" 8 at,b2 male	0 R71 0 R72 0 R73 0 R74 0 R75	57.11.3109 57.11.3109 57.11.3109 57.11.3103 57.11.3103	1R0 1R0 1R0 10k 10k	MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207
P2		R2 D40	→ • D36 •	0 MP9 0 MP1 0 MP1 0 MP1 0 P2	53.03.0165 1 pc 53.03.0166 4 pc 53.03.0168 1 pc 53.03.0173 1 pc 54.11.2007 54.01.0270 2 pc	20p ss 8p se 16p se 28p 2*8p ss 8p	DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL 0.6", löt, gerade	0 R71 0 R72 0 R73 0 R74	57.11.3109 57.11.3109 57.11.3109 57.11.3103	1R0 1R0 1R0 10k 10k 10k	MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207
.0119 P2		R2 D40	D36 R3 • C20	0 MP9 0 MP1 0 MP1 0 MP1 0 P2 117 21 0 P7	53.03.0165 1 pc 53.03.0166 4 pc 53.03.0168 1 pc 53.03.0173 1 pc 54.11.2007	20p ss 8p se 16p se 28p 2*8p ss 8p	DIL-socket 0.3* DIL-socket 0.3* DIL-socket 0.3* DIL 0.6*, Mt, gerade EU-BK 2* 8 at 1,bz male Stecker CIS parallelisteck	0 R71 0 R72 0 R73 0 R74 0 R75 0 R76	57.11.3109 57.11.3109 57.11.3109 57.11.3103 57.11.3103 57.11.3103	1R0 1R0 1R0 10k 10k	MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207
P2		R2 D40	D36 R3 • C20	0 MP 8 0 MP 1 0 MP 1 0 MP 1 0 P2 0 P7 0 P8 0 Q1 0 Q4	53.03.0165 1 pc 53.03.0166 4 pc 53.03.0168 1 pc 53.03.0173 1 pc 54.11.2007 54.01.0270 2 pc 54.01.0270 1 pc 50.03.1502 50.03.0515	ee 20p es 8p ee 16p ee 28p 2*8p 2*8p 8p ee 8p IRF522 BC307B	DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL No"; ML gerade EU-RK 2" 8 a 1,12 male Stocker CIS parallelistick Stocker CIS parallelistick N-VMOS-EET 100V, 7A PNP 100mA 45V	0 R71 0 R72 0 R73 0 R74 0 R75 0 R76 0 R77 0 R78	57.11.3109 57.11.3109 57.11.3109 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103	1R0 1R0 1R0 10k 10k 10k 10k 47 1k0	MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207
.0119 P2		R2 D40	D36 R3 • C20	0 MP 8 0 MP 1 0 MP 1 0 P 2 0 P 3 0 P 8 0 Q 1 0 Q 4 0 Q 5	53,03,0165 1 pc 53,03,0166 4 pc 53,03,0168 1 pc 53,03,0173 1 pc 54,11,2007 54,01,0270 2 pc 54,01,0270 1 pc 50,03,1502 50,03,0436	ee 20p ss 8p ee 16p ee 28p 2*8p ss 8p ee 8p IRF522 BC3078 BC2378	DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL 0.5", kit, gerade EU-SRC 2" B a 11.0 male Stecker CIS parallelsteck N-VMCS-PET 100V, 7A PNP 100mA 45V NPN 100mA 45V	0 R71 0 R72 0 R73 0 R74 0 R75 0 R76 0 R77 0 R78 0 R78 0 R79 0 R80	57.11.3109 57.11.3109 57.11.3109 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3102 57.11.3102	1R0 1R0 1R0 10k 10k 10k 10k 4k7 1k0	MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207
O119		R2 D40	D36 R3 • C20	0 MP0 0 MP1 0 MP1 0 MP1 0 P2 0 P7 0 Q1 0 Q1 0 Q5	53.03.0165 1 pc 53.03.0168 4 pc 53.03.0168 1 pc 53.03.0173 1 pc 54.11.2007 54.01.0270 2 pc 54.01.0270 1 pc 50.03.0515 50.03.0436 50.03.0436	ee 20p es 8p ee 16p ee 28p 2*8p ee 8p IRF522 BC307B BC237B BC237B	DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL No"; MI, gerade EU-SK 2" 8 a 1,12 male Stocker CIS parallelstock Stocker CIS parallelstock N-VMOS-FET 100V, 7A PNP 100mA 45V NPM 100mA 45V NPM 100mA 45V	0 R71 0 R72 0 R73 0 R74 0 R75 0 R76 0 R77 0 R78 0 R79 0 R80 0 R81	57.11.3109 57.11.3109 57.11.3109 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3102 57.11.3102 57.11.3102 57.11.3102	1R0 1R0 1R0 10k 10k 10k 10k 4k7 1k0 1k0	MF. 1%, 0207 MF. 1%, 0207 MF. 1%, 0207 MF. 1%, 0207 MF. 1%, 0207 MF. 1%, 0207 MF. 1%, 0207 MF. 1%, 0207 MF. 1%, 0207 MF. 1%, 0207 MF. 1%, 0207 MF. 1%, 0207 MF. 1%, 0207
0119 P 2 O C 52 new dozu		R2 D40	.5.97 RO CL 1.913.1	0 MP 8 0 MP 1 0 MP 1 0 P 2 0 P 3 0 P 8 0 Q 1 0 Q 4 0 Q 5	53,03,0165 1 pc 53,03,0166 4 pc 53,03,0168 1 pc 53,03,0173 1 pc 54,11,2007 54,01,0270 2 pc 54,01,0270 1 pc 50,03,1502 50,03,0436	ee 20p ss 8p ee 16p ee 28p 2*8p ss 8p ee 8p IRF522 BC3078 BC2378	DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL 0.5", kit, gerade EU-SRC 2" B a 11.0 male Stecker CIS parallelsteck N-VMCS-PET 100V, 7A PNP 100mA 45V NPN 100mA 45V	0 R71 0 R72 0 R73 0 R74 0 R75 0 R76 0 R77 0 R78 0 R78 0 R79 0 R80	57.11.3109 57.11.3109 57.11.3109 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3102 57.11.3102	1R0 1R0 1R0 10k 10k 10k 10k 4k7 1k0	MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207
O119 ① C52 neu dozu		3 15	.5.97 RO CL 1.913.1	0 MP 0 MP 1 0 MP 1 0 MP 1 0 MP 1 0 MP 1 0 MP 1 0 P 7 0 P 7 0 P 7 0 Q 1 0 Q 5 0 Q 6 0 Q 7	53.03.0185 1 pc 53.03.0186 4 pc 53.03.0188 1 pc 53.03.0173 1 pc 54.11.2007 54.01.0270 2 pc 54.01.0270 1 pc 50.03.1502 50.03.0515 50.03.0438 50.03.0438	ee 20p es 8p es 16p es 28p 2*8p es 8p es 8p es 8p iRF522 BC3078 BC2378 BC2378 BC2378	DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL 0.5", lkf, gerade EU-SKC 2" B a 11.0 male Stocker CIS paralleistock Stocker CIS paralleistock N-VMOS-FET 100V, 7A PNP 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V	0 R71 0 R72 0 R73 0 R74 0 R75 0 R76 0 R77 0 R78 0 R79 0 R80 0 R81 0 R82	57.11.3109 57.11.3109 57.11.3109 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3472 57.11.3102 57.11.3102 57.11.3103 57.11.3103	1R0 1R0 1R0 10k 10k 10k 10k 4k7 1k0 1k0	MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207 MF, 1%, 0207
① C52 neu dazu Pos. Part No. Qty. Type/Val. Descrip C1 5922.8470 4*u EL 4	C 8 C 9	Part No. Qy. Type/	.5.97 RO CL 1.913.1 Description EL 16V 20% RMS	117.21 0 MP1 0 MP1 0 MP1 0 MP1 0 P2 0 P7 0 P3 0 Q1 0 Q3 0 Q3 0 Q5 0 Q6 0 Q7 0 Q8	53.03.0185 1 pc 53.03.0188 2 pc 53.03.0188 1 pc 53.03.0173 1 pc 54.11.2007 54.01.0270 2 pc 54.01.0270 1 pc 50.03.0515 50.03.0438 50.03.0438 50.03.0438 50.03.0438 50.03.0438 50.03.0438 50.03.0438	e 20p s 8p e 16p e 28p 2*8p s 8p e 8p IRF522 BC307B BC237B BC237B BC237B BC237B BC237B BC237B BC237B BC237B BC237B	DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL 87, 86, gerade EU-RK 2" 0 a 1/12 male Stocker CIS paralleisteck Stocker CIS paralleisteck N-VMGS-EET 100V, 7A PNF 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m9 45V NPN 100m9 45V NPN 100m9 45V NPN 100m9 45V NPN 100m9 45V NPN 100m9 45V NPN 100m9 45V NPN 100m9 45V NPN 100m9 45V NPN 100m9 45V NPN 100m9 45V NPN 100m9 45V NPN 100m9 45V NPN 100m9 45V NPN 100m9 45V NPN 100m9 45V NPN 100m9 45V NPN 100m9 45V	0 R 71 0 R 72 0 R 73 0 R 74 0 R 75 0 R 76 0 R 77 0 R 78 0 R 79 0 R 80 0 R 80 0 R 80 0 R 88	57.11.3109 57.11.3109 57.11.3109 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3102 57.11.3102 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103	1R0 1R0 1R0 10k 10k 10k 10k 10k 10k 1k0 1k0 1k0 1k	MF, 1%, 0,207 MF, 1%, 0,207 MF, 1%, 0,207 MF, 1%, 0,207 MF, 1%, 0,207 MF, 1%, 0,207 MF, 1%, 0,207 MF, 1%, 0,207 MF, 1%, 0,207 MF, 1%, 0,207 MF, 1%, 0,207 MF, 1%, 0,207 MF, 1%, 0,207 MF, 1%, 0,207 MF, 1%, 0,207 MF, 1%, 0,207 MF, 1%, 0,207 MF, 1%, 0,207
© C52 new dgzu Pos. Part No. Cty. Type/Val. Descri C1 59.22.6470 4**u EL 4 C2 59.22.6470 4**u EL 4		3 15 Part No. Qy. Type 5922 4221 2200 200 3 220 3 200	.5.97 RO CL 1.913.1 Description EL 16V 20% RMS EL 16V 20% RMS	117.21 0 MP 0 MP 1 0 MP	53.03.0185 1 pc 53.03.0168 4 pc 53.03.0168 1 pc 53.03.0173 1 pc 54.01.2007 0 pc 54.01.2007 0 pc 54.01.2007 0 pc 54.01.2007 0 pc 54.01.2007 0 pc 54.01.2007 0 pc 54.03.0436 50.03.0436 50.03.0436 50.03.0436 50.03.0436 50.03.0436 50.03.0436 50.03.0436 50.03.0436 50.03.0436 50.03.0436	e 20p s 8p e 16p e 26p 2*8p s 8p e 8p iRF522 BC307B BC237B BC237B BC237B BC237B BC237B BC237B BC237B BC237B BC237B BC237B BC237B BC237B BC237B BC237B BC237B	DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.5 parallelstock Stocker CIS parallelstock N-VMOS-FET 100V, 7A PNP 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V	0 R 71 0 R 72 0 R 73 0 R 74 0 R 75 0 R 76 0 R 77 0 R 78 0 R 79 0 R 80 0 R 81 0 R 82 0 R 88 0 R 88 0 R 89	57.11.3109 57.11.3109 57.11.3109 57.11.3109 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3102 57.11.3102 57.11.3103 57.11.3102 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103	1R0 1R0 1R0 10k 10k 10k 10k 10k 10k 10k 10k 1k0 1k0	MF, 1%, 0207 MF, 1%, 0207
① C52 neu dozu Pos. Part No. City. Type/Val. Descrit C1 5922.6470 4'u EL 4 C2 5922.6470 4'u EL 4 C3 5922.6470 4'u EL 4	ription	Part No. Cly. Type/ 59.22.4221 2200 59.22.4221 2200 59.22.4221 2200	/al. Description EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS	117.21 0 MP1 0 MP1 0 MP1 0 MP1 0 MP2 0 P2 0 P7 0 Q1 0 Q3 0 Q3 0 Q6 0 Q7 0 Q8 0 Q9 0 Q10 0 Q11 0 Q41	\$3,03,0185 1 pc \$5,03,0186 3 pc \$5,03,0186 1 pc \$5,03,0176 1 pc \$5,03,0173 1 pc \$4,11,2007 \$4,01,0270 2 pc \$4,01,0270 1 pc \$4,01,0270 1 pc \$4,03,0436 \$5,03,0456 \$5,03,0456 \$5,03,0456 \$5,03,0456 \$5,03,0456 \$5,03,0456 \$5,0456 \$5,0456 \$5,0456 \$5,0456 \$5,0456 \$5,0456 \$5,0456 \$5,0456 \$5,045	e 20p s 8p e 16p e 28p 2*8p e 8p e 8p e 8p e 8p e 8p e 8p e 8p e	DIL -socket 0.3" DIL -socket 0.3" DIL -socket 0.3" DIL -socket 0.3" DIL -87, 86, gerade EU-8K 2" 0 a 1,12 male Stecker CIS paralleisteck Stecker CIS paralleisteck N-VMGS-EET 100V, 7A PNP 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V	0 R 71 0 R 72 0 R 73 0 R 74 0 R 75 0 R 76 0 R 77 0 R 78 0 R 77 0 R 80 0 R 81 0 R 82 0 R 88 0 R 88 0 R 89 0 R 90 0 R 91	57.11.3109 57.11.3109 57.11.3109 57.11.3109 57.11.3109 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3501 57.11.3501 57.11.3503 57.11.3205 57.11.3205 57.11.3205 57.11.3205	1R0 1R0 1R0 10k 10k 10k 10k 10k 1k0 1k0 1k0 1k0 1k	MF, 1%, 0207 MF, 1%, 0207
© C52 neu dazu Pos. Parl No. Qty. TypelVal. Descrit C1 59:22.6470 4**u EL 4 C2 59:22.6470 4**u EL 4 C3 59:22.6470 4**u EL 4 C4 59:08.0472 447 EL 4 C4 59:08.0472	c 8	3 15 Part No. Qy. Type 5922 4221 2200 200 3 220 3 200	.5.97 RO CL 1.913.1 Description EL 16V 20% RMS EL 16V 20% RMS	117.21 0 MP 0 MP 1 0 MP	53.03.0185 1 pc 53.03.0168 4 pc 53.03.0168 1 pc 53.03.0173 1 pc 54.01.2007 0 pc 54.01.2007 0 pc 54.01.2007 0 pc 54.01.2007 0 pc 54.01.2007 0 pc 54.01.2007 0 pc 54.03.0436 50.03.0436 50.03.0436 50.03.0436 50.03.0436 50.03.0436 50.03.0436 50.03.0436 50.03.0436 50.03.0436 50.03.0436	e 20p s 8p e 16p e 26p 2*8p s 8p e 8p iRF522 BC307B BC237B BC237B BC237B BC237B BC237B BC237B BC237B BC237B BC237B BC237B BC237B BC237B BC237B BC237B BC237B	DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.5 parallelstock Stocker CIS parallelstock N-VMOS-FET 100V, 7A PNP 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V	0 R 71 0 R 72 0 R 73 0 R 74 0 R 75 0 R 76 0 R 77 0 R 78 0 R 79 0 R 80 0 R 81 0 R 82 0 R 88 0 R 88 0 R 89	57.11.3109 57.11.3109 57.11.3109 57.11.3109 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3102 57.11.3102 57.11.3103 57.11.3102 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103	1R0 1R0 1R0 10k 10k 10k 10k 10k 10k 10k 1k0 1k0 1k	MF, 1%, 0207 MF, 1%, 0207
Pos. Part No. City. Type/Val. Description of the Company of the Co	C 8 C 9	Part No. Cty. Type/ 59.22.4221 220u 59.22.4221 220u 59.22.4221 220u 59.32.4221 220u 59.34.2470 47p	(20) (20) (20) (20) (20) (20) (20) (20)	117.21 0 MP1 0 MP1 0 MP1 0 MP2 0 P2 0 P3 0 P4 0 Q5 0 Q6 0 Q7 0 Q8 0 Q9 0 Q10 0 Q1 0 Q1	53.03.0185 1pc 53.03.0188 1pc 53.03.0178 1pc 53.03.0179 1pc 54.11.2007 54.01.0270 2pc 54.01.0270 2pc 56.03.1502 50.03.0515 50.03.0438 50.03.0438 50.03.0438 50.03.0438 50.03.0515 50.03.0515 50.03.0515 50.03.0515 50.03.0515	20p s 8p e 10p e 20p s 8p e 20p s 8p e 20p 2*8p s 8p e 8p e 8p e 2037B BC237B BC37B BC37B BC37B BC37B BC37B BC37B BC37B BC37B BC37B	DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL No.5", Mt. perade EU-RK 2" a 8 1.12 maile Stecker CIS parallelsteck Stecker CIS parallelsteck N-VMOS-FET 100V, 7A PNP 100mA 45V NPN 100mA 45V	0 R 71 0 R 72 0 R 73 0 R 73 0 R 74 0 R 75 0 R 76 0 R 77 0 R 78 0 R 79 0 R 80 0 R 80 0 R 80 0 R 80 0 R 80 0 R 80 0 R 80 0 R 80 0 R 80	57.11.3109 57.11.3109 57.11.3109 57.11.3109 57.11.3103 57.11.3103 57.11.3103 57.11.3102 57.11.3102 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103	1R0 1R0 1R0 10k 10k 10k 10k 10k 1k0 1k0 1k0 1k0 1k	MF, 1%, 0207 MF, 1%, 0207
Pos. Part No. Qty. TypelVal. Descrit C1 59.22.8470 4*u EL 4 C2 59.22.8470 4*u EL 4 C3 59.22.8470 4*u EL 4 C4 59.06.0472 447 EL 7 C5 59.06.0472 407 PETP, C6 59.02.8470 4*u EL 6 C6 59.02.8470 4*u EL 6 C6 59.02.8470 4*u EL 6	C 8 C 9	## Part No. Qy. Typew Fig. 2	/al. Description EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS SAL 10V 20% CER 890, 5%, N150	117.21 0 MP 9 0 MP 1 0 MP 1 0 MP 1 0 MP 1 0 P 7 0 P 7 0 Q 1 0 Q 1 0 Q 5 0 Q 6 0 Q 7 0 Q 8 0 Q 9 0 Q 10 0 Q 11 0 Q 12	53.03.0165 po 53.03.0165 po 53.03.0165 po 53.03.0165 po 53.03.0165 po 54.11.0270 po 54.01.0270 po 54.01.0270 po 50.03.1602 50.03.0495 50.03.0495 50.03.0495 50.03.0495 50.03.0495 50.03.0566 50.03.0565 50.0565 50.0565 50.0565 50.0565 50.0565 50.056	e 20p s 8p e 16p e 28p 2*8p e 8p liFF522 BC307B BC237B	DIL - Jocket 0.3" DIL - Jocket 0.3" DIL - Jocket 0.3" DIL - Jocket 0.3" DIL - Service 1.3" DIL - Service 1.3" Stocker CIS paralletisteck Stocker CIS paralletisteck Stocker CIS paralletisteck N-VNGS-FET 100V, 7A PNF 100mA 45V NPN 100mA 45V	0 R 71 0 R 72 0 R 73 0 R 74 0 R 75 0 R 76 0 R 76 0 R 77 0 R 78 0 R 80 0 R 81 0 R 82 0 R 85 0 R 89 0 R 89 0 R 89 0 R 89	57.11.3109 57.11.3109 57.11.3109 57.11.3109 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3102 57.11.3102 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103	1R0 1R0 1R0 10k 10k 10k 10k 10k 10k 10k 1k0 1k0 1k	MF, 1%, 0,027 MF, 1%, 0,027
D119 ① C52 neu dazu Descrit 1 59.22.6470 4**u EL 4 C2 59.22.6470 4**u EL 4 C3 59.22.6470 4**u EL 4 C4 59.06.0472 47 PETP, C5 59.06.5104 100n PETP, C6 59.22.6470 4**u EL 4 C7 59.22.6470 4**u EL 4 C8 59.02.26470 4**u EL 6 C8 59.22.2470 2**u EL 6 C8 59.22.2421 2**u EL 6	c 8 C 9	Part No. Qy. Type \$ 50 22 4221 200 \$ 50 22 4221 220 \$ 50 22 4221 200 \$ 50 24 427 470 \$ 50 34 470 470 \$ 50 60 105 100 \$ 50 60 105 100 \$ 50 60 105 100	/al. Description EL 16V 20% RMS	117.21	53.03.0165 pc 53.03.0165 pc 53.03.0165 pc 53.03.0173 pc 53.03.0173 pc 54.11.2077 54.91.0277 pc 50.03.1502 50.03.0455 50.03.0456 50.03.0456 50.03.0456 50.03.0456 50.03.0456 50.03.0456 50.03.0456 50.03.0456 50.03.0456 50.03.0456 50.03.0456 50.03.0456 50.03.0456 50.03.0456 50.03.0508 50.03.0644 50.03.0648 50.0648 50.0648 50.0648 50.0648 50.0648 50.0648 50.064	20 20 5 8 9 16 9 16 9 16 9 16 9 16 9 16 9 16 9	DIL -socket 0.3" DIL -socket	0 R 71 0 R 72 0 R 73 0 R 74 0 R 75 0 R 76 0 R 76 0 R 77 0 R 78 0 R 78 0 R 78 0 R 80 0 R 80 0 R 80 0 R 80 0 R 80 0 R 80 0 R 80 0 R 80 0 R 80 0 R 90 0 R 90 0 R 90	57.11.3109 57.11.3109 57.11.3109 57.11.3109 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3102 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103	1R0 1R0 1R0 1R0 10k 10k 10k 10k 10k 1k0 1k0 1k0 10k 10k	MF, 1%, 0207 MF, 1%, 0207
Pos. Part No. Qty. TyperVal. Descrit C1 59 22.6470 4*u EL 4 C2 59 22.6470 4*u EL 4 C4 59.05.0472 447 PETP, C5 59.06.5104 1000 PETP, C6 59 22.6470 4*u EL 4 C6 59 22.6470 4*u EL 4 C7 59 22.6470 4*u EL 4 C8 59 22.2470 2500 EL 5 C9 59 22.2421 2500 EL 5 C9 59 22.2421 2500 EL 5 C9 59 22.2421 2500 EL 5	C 8 C 9	Part No. Qy. Type/ Special Control	/al. Description EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS SAL 10V 20% PETP, 63V, 5%, RMS PETP, 50V, 10%, RMS PETP, 50V, 10%, RMS PETP, 50V, 10%, RMS PETP, 50V, 10%, RMS PETP, 50V, 10%, RMS	117.21 0 P2 117.21 0 P2 0 P7 0 P8 0 Q1 0 Q5 0 Q6 0 Q7 0 Q8 0 Q1	53.03.0165 pe 53.03.0161 pe 53.03.0161 pe 53.03.0161 pe 54.11,2007 pe 54.11,2007 pe 54.11,2007 pe 54.01,0270 pe 50.03.0160 50.0	20 20 5 8 9 5 9 5 9 9 5 9 9 9 9 9 9 9 9 9 9 9	DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-Socket 0.3" DIL-Socket 0.3" DIL-Socket 0.3" DIL-Socket 0.3" Stocker CIS parallelsteck Stocker CIS parallelsteck NCWIGS-EET 100V, 7A PNF 100mA 45V NPN 100mA 45V NPS 42 MPS A 42 MPS A 42	0 R 71 0 R 72 0 R 73 0 R 74 0 R 75 0 R 76 0 R 77 0 R 77 0 R 77 0 R 78 0 R 77 0 R 80	57.11.3109 57.11.3109 57.11.3109 57.11.3109 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3203 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103	1R0 1R0 1R0 1R0 10k 10k 10k 10k 10k 10k 10k 10k 10k 10	MF, 1%, 0207 MF, 1%, 0207
① C52 neu dozu ① C52 neu dozu ② C52 neu dozu ② C52 neu dozu ② C52 neu dozu ② C52 neu dozu ② C52 neu dozu ② C52 neu dozu ② S922.6470 47u EL 4. ⑤ S902.6470 47u EL 4. ⑤ S902.6470 47u EL 4. ⑤ S902.6470 47u EL 4. ⑥ S902.6470 47u EL 4. ⑥ S902.6470 47u EL 4. ⑥ S902.	C 8 C 9	Part No. Qy. Type \$ 0.0 R 1	/al. Description EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS FETP, 50V, 50%, RMS PETP, 50V, 50%, RMS	0 MPP 0 MP1 0 MP1 0 MP1 0 MP1 0 P2 0 P2 0 P3 0 Q1 0 Q5 0 Q5 0 Q5 0 Q6 0 Q7 0 Q1 0 Q1 0 Q1 0 Q1 0 Q1 0 Q1 0 Q1 0 Q1	53.03.0165 pc 53.03.0165 pc 53.03.0165 pc 53.03.0175 pc 54.11.2007 54.01.0277 2 pc 54.01.0277 2 pc 54.01.0277 2 pc 54.01.0277 2 pc 54.01.0277 2 pc 54.03.0456 56	20 20 5 8 9 16 16 16 20 16 20 16 20 16 20 16 20 16 20 16 20 16 20 21 20	DIL -socket 0.3" DIL -socket 0.3" DIL -socket 0.3" DIL -socket 0.3" DIL -socket 0.3" DIL -socket 0.3" DIL -socket 0.3" DIL -socket 0.3" DIL -socket 0.3" Stocker CIS parallelstock Stocker CIS parallelstock N-VMOS-FET 100V, 7A PNP 100mA 45V NPN 100mA 45V	0 R 71 0 R 73 0 R 73 0 R 73 0 R 75 0 R 76 0 R 77 0 R 78 0 R 89 0 R 80	57.11.3109 57.11.3109 57.11.3109 57.11.3109 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3102 57.11.3102 57.11.3103	180 180 180 100 100 100 100 100 100 100	MF, 1%, 0207 MF, 1%, 0207
P2 Otto Part No. Qty. TyperVal. Description 10 C 52 neu dozu Posc. Part No. Qty. TyperVal. Description 10 59 22.6470 4**u EL 4** 12 59 22.6470 4**u EL 4** 14 59.06.0472 487 PETP, 15 59.06.5104 1000 PETP, 16 6 59.22.6470 4**u EL 4** 17 59.22.6470 4**u EL 4** 18 6 59.22.4271 220u EL 5** 19 9 59.22.4271 220u EL 5** 10 9 59.22.4271 220u EL 5** 10 10 59.31.6683 686 MPETF 10 11 59.25.8220 20 EL 5** 10 11 59.25.8220 20 EL 5** 10 20 ES.8220 20 EL 5** 20 20 E	C C C C C C C C C C	Part No. Qv. Type/ Substituting Part No. Qv. Type/ Substitu	/al. Description EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS SAL 10V 20% PETP, 63V, 5%, RM5 PETP, 50V, 10%, RM6 PETP, 50V, 10%, RM6 PETP, 50V, 10%, RM6 PETP, 50V, 50%, RM5 PETP, 63V, 5%, RM5 PETP, 63V, 5%, RM5 PETP, 63V, 5%, RM5 PETP, 63V, 5%, RM5 PETP, 63V, 5%, RM5 PETP, 63V, 5%, RM5 PETP, 63V, 5%, RM5 PETP, 63V, 5%, RM5 PETP, 63V, 5%, RM5 PETP, 63V, 5%, RM5 PETP, 63V, 5%, RM5 PETP, 63V, 5%, RM5	117.21 0 MP1 0 MP1 0 MP1 0 MP2 0 P2 0 P7 0 P8 0 Q1 0 Q6 0 Q7 0 Q8 0 Q7 0 Q8 0 Q1 0 Q1 0 Q1 0 Q1 0 Q1 0 Q1 0 Q1 0 Q1	53.03.0165 op 5	20 20 5 5 8 p 5 6 10 10 10 10 10 10 10 10 10 10 10 10 10	DIL-socket 0.3* DIL-socket 0.3* DIL-socket 0.3* DIL-socket 0.3* DIL-Socket 0.3* DIL-Socket 0.3* DIL-Socket 0.3* Stocker CIS parallelsteck Stocker CIS parallelsteck N-VNGS-EET 100V, 7A PNF 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPS 42 MFS A 42 MFS A 42 MFS A 42 MFS A 42 MFS A 42	0 R 71 0 R 72 0 R 73 0 R 74 0 R 75 0 R 76 0 R 77 0 R 77 0 R 78 0 R 77 0 R 88 0 R 80	57.11.3109 57.11.3109 57.11.3109 57.11.3109 57.11.3103	180 180 180 190 190 190 190 190 190 190 190 190 19	MF, 1%, 0207 MF, 1%, 0207
D119 ① C52 neu dozu ① C52 neu dozu ② C52 neu dozu ② C52 neu dozu ② C52 neu dozu ② S922.6470 4*u EL 4 ② S922.6470 4*u EL 4 © S902.6470 4*Tu EL 4 © S902.6470 4*Tu EL 4 © S902.6470 4*Tu EL 4 © S902.6470 4*Tu EL 6 © S902.6471 4*Tu EL 6 © S902.6471 4*Tu EL 6 © S902.6471 4*Tu EL 6 © S902.6471 4*Tu EL 6 © S902.6471 4*Tu EL 6 © S902.6470 4*Tu EL 6 © S902.	C 8 C 9	Part No. Qy. Type \$ 0.0 R 1	/al. Description EL 19V 20% RM5 EL 19V 20% RM5 EL 19V 20% RM5 EL 19V 20% RM5 EL 19V 20% RM5 EL 19V 20% RM5 EL 19V 20% RM5 EL 19V 20% RM5 PETP, 50V, 10%, RM6 PETP, 50V, 10%, RM6 PETP, 50V, 10%, RM6 PETP, 50V, 10%, RM6 PETP, 50V, 50%, RM5 PETP, 50V, 50%, RM5 PETP, 50V, 50%, RM5 PETP, 50V, 50%, RM5 PETP, 50V, 50%, RM5 PETP, 60V, 60W, RM5 PETP, 60V, 60W, RM5 PETP, 60V, 60W, RM5 PETP, 60V, 60W, RM5 PETP, 60V, 60W, RM5 PETP, 60V, 60W, RM5 PETP, 60V, 60W, 60W, 60W, 60W, 60W, 60W, 60W, 60W	0 MPP 0 MP1 0 MP1 0 MP1 0 MP1 0 P2 0 P2 0 P3 0 Q1 0 Q5 0 Q5 0 Q5 0 Q6 0 Q7 0 Q1 0 Q1 0 Q1 0 Q1 0 Q1 0 Q1 0 Q1 0 Q1	53.03.0165 pc 53.03.0165 pc 53.03.0165 pc 53.03.0175 pc 54.11.2007 54.01.0277 2 pc 54.01.0277 2 pc 54.01.0277 2 pc 54.01.0277 2 pc 54.01.0277 2 pc 54.03.0456 56	20 20 5 8 9 16 16 16 20 16 20 16 20 16 20 16 20 16 20 16 20 16 20 21 20	DIL-socket 0.3* DIL-so	0 R 71 0 R 73 0 R 73 0 R 73 0 R 75 0 R 76 0 R 77 0 R 78 0 R 89 0 R 80	57.11.3109 57.11.3109 57.11.3109 57.11.3109 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3102 57.11.3102 57.11.3103	180 180 180 100 100 100 100 100 100 100	MF, 1%, 0207 MF, 1%, 0207
Pos. Part No. Qty. Type/Val. Descrift C 1 59.22.6470 4*u EL 4 C 2 59.22.6470 4*u EL 4 C 3 59.22.6470 4*u EL 4 C 4 59.00.6472 477 PETP, C 5 50.06.5104 100n PETP, C 6 50.22.6470 4*u EL 4 C 7 59.22.6470 4*u EL 4 C 8 59.22.4221 22.0u EL 7 C 9 59.22.4221 22.0u EL 7 C 10 59.31.6835 88n MPETF C 11 59.25.8229 2u2 EL 22 C 12 59.32.1471 4*00 CER 14 C 13 59.32.1471 4*00 CER 14 C 14 50.32.1471 4*00 CER 14 C 14 50.32.1	Igition	Part No. Qy. Typew 59.22.4221 2200 59.24.221 2200 59.24.221 2200 59.24.221 2200 59.34.2470 470 59.05.5104 1000 59.05.5104 100 59.05.5104 100 59.22.2470 470 59.05.5104 100 59.22.2470 470 59.05.5104 100 59.22.2470 470 59.05.5104 100 59.22.2470 470 59.05.5104 100 59.22.2470 470 59.05.5104 100 59.22.2470 470 59.05.5104 100 59.22.2470 470 59.05.5104 100 59.22.2470 470 59.05.5104 100 59.22.2470 470 59.05.5104 100 59.22.2470 470 59.05.5104 100 59.22.2470 470 59.05.5104 100 59.22.2470 470 59.05.5104 100	/al. Description EL 197 20% RM5 EL 197 20% RM5 EL 197 20% RM5 EL 197 20% RM5 EL 197 20% RM5 EL 197 20% RM5 EL 197 20% RM5 EL 197 20% RM5 PETP, 50V, 10%, RM6 PETP, 50V, 10%, RM6 PETP, 50V, 10%, RM6 PETP, 50V, 50%, RM6	0 MP 0 MP 1 0 MP	\$3,03,0161 App \$3,03,0161 App \$3,03,0161 App \$3,03,0161 App \$3,03,0161 App \$4,11,2007 App \$4,01,0270 App \$4,01,	ee 20p 20p 20p 20p 20p 20p 20p 218p 218p 2	DIL-socket 0.3* DIL-socket 0.3* DIL-socket 0.3* DIL-socket 0.3* DIL-Socket 0.3* DIL-Socket 0.3* DIL-Socket 0.3* Stocker CIS parallelsteck Stocker CIS parallelsteck N-VNGS-EET 100V, 7A PNF 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPS 42 MFS A 42 MFS A 42 MFS A 42 MFS A 42 MFS A 42	0 R 71 0 R 72 0 R 73 0 R 73 0 R 75 0 R 75 0 R 77 0 R 78 0 R 87 0 R 80	57.11.3109 57.11.3109 57.11.3109 57.11.3109 57.11.3103	180 180 180 100 100 100 100 100 100 100	MF, 1%, 0207 MF, 1
Pos. Part No. Cty. Type/Val. Description of C52 neu dozu C1 59 22,6470 4'u EL 4 C2 59 22,6470 4'u EL 4 C3 59 22,6470 4'u EL 4 C4 59 08,0472 407 PETP, C5 59 08,05104 1000 PETP, C6 59 08,05104 1000 PETP, C7 59 22,6470 4'u EL 4 C8 59 22,4271 220u EL 5 C9 59 22,4271 220u EL 5 C10 59 31,6853 68n MPETF C11 59 25,8229 2u EL 5 C12 59 32,1471 4'00 CER 14 C13 59 32,1471 4'00 CER 14 C14 59 32,1471 4'00 CER 14 C15 59 32,1471 4'00 CER 14 C15 59 32,1471 4'00 CER 14 C16 59 32,1471 4'00 CER 14 C17 59 52,1471 4'00 CER 14 C17 59 52,1471 4'00 CER 14 C18 59 52,1471 4'00 CER 14	C C C C C C C C C C	Part No. Qy. Type/ 59 22 4221 220 59 22 4221 220 59 22 4221 220 59 22 4270 47p 59 0.0 105 59 0.5 104 100 59 0.5 104 100 59 0.5 104 70 59 0.5 104 70 59 0.5 104 70 59 0.5 104 70 59 0.5 104 70 59 0.5 104 100 59	Z2. 5.97 RO CL 1.913.1 EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS SAL 10V 20% PETP, 63V, 5%, RM5 PETP, 50V, 10%, RM6 PETP, 63V, 5%, RM6 PETP,	117.21 0 MP 1 0 MP 1 0 MP 1 0 MP 2 0 P2 0 P7 0 P8 0 Q1 0 Q4 0 Q5 0 Q8 0 Q7 0 Q8 0 Q1 0 Q1 0 Q1 0 Q1 0 Q1 0 Q1 0 Q1 0 Q1	53.03.0165 op 5	20 20p 55 8p 50 10p 10p 10p 10p 10p 10p 10p 10p 10p 10	DIL-socket 0.3" DIL-socket 0.3	0 R 71 0 R 72 0 R 73 0 R 74 0 R 75 0 R 76 0 R 76 0 R 77 0 R 77 0 R 78 0 R 80 0	57.11.3109 57.11.3109 57.11.3109 57.11.3109 57.11.3103	180 180 180 190 190 190 190 190 190 190 190 190 19	MF, 1%, 0207 MF, 1%, 0207
Pos. Part No. Qty. TyperVal. Descrit C1 5922.8470 4"u EL. C2 5922.8470 4"u EL. C4 5902.8470 4"u EL. C4 5902.8470 4"u EL. C5 5922.8470 4"u EL. C6 5922.8470 4"u EL. C7 5902.8470 4"u EL. C8 5922.8470 4"u EL. C8 5922.8470 4"u EL. C9 5922.8470 4"u EL. C1 5932.8470 4"u EL. C1 5932.8471 4"0 EL. C1 5932.8471 4"0 EL. C1 5932.8471 4"0 CER 10 C1 5932.	C 8 C 9	Part No. Qy. Typew 59.22.4221 2200 59.24.221 2200 59.24.221 2200 59.24.221 2200 59.34.2470 470 59.05.5104 1000 59.05.5104 100	/al. Description EL 18V 20% RM5 EL 18V 20% RM5 EL 18V 20% RM5 EL 19V 20% RM5 EL 19V 20% RM5 EL 19V 20% RM5 EL 19V 20% RM5 EL 19V 20% RM5 EL 19V 20% RM5 EL 19V 20% RM5 PETF, 50V, 10%, RM6 PETF, 50V, 10%, RM6 PETF, 50V, 10%, RM6 PETF, 63V, 5%, RM5 EL 40V 20% RM5 EL 40V 20% RM5 EL 40V 20% RM5 PETF, 63V, 5%, RM5 CER, 20%, 50V CER 10%, 50V CER 10%, 50V PETF, 63V, 5%, RM5	117.21	53.03.0165 po 53.03.0168 po 53.03.0168 po 53.03.0173 po 53.03.0173 po 54.01.0277 po 54.01.0277 po 54.01.0277 po 50.03.1652 50.03.0453 50.03.0454 50.03.0456 50.0	ee 20p si 5p si 6p se 16p se 278p si 6p si 6p si 6p si 6p si 7278p si 6p	DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" Stocker CIS paralleisteck Stocker CIS paralleisteck N-VINGS-FET 100V, 7A PNP 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPS 4.42 MPS A.42 MPS A.42 NPS	0 R 71 0 R 72 0 R 73 0 R 73 0 R 74 0 R 75 0 R 76 0 R 76 0 R 77 0 R 78 0 R 78 0 R 80 0 R 80 0 R 80 0 R 80 0 R 80 0 R 80 0 R 80 0 R 80 0 R 80 0 R 90 0	57.11.3109 57.11.3109 57.11.3109 57.11.3109 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3102 57.11.3103	180 180 180 190 190 190 190 190 190 190 190 190 19	MF. 19, 0207 MF. 19, 0207
Pos. Part No. City. Type/Val. Description of C52 new dozu C1 59022.6470 4'u EL 4 C2 59022.6470 4'u EL 4 C3 59022.6470 4'u EL 4 C4 5900.6104 1000 PETP. C5 590.65104 1000 PETP. C6 5902.26470 4'u EL 4 C7 5902.26470 4'u EL 4 C8 5902.2421 220u EL 5 C9 5902.2421 220u EL 5 C10 5903.2421 220u EL 5 C10 5903.2421 4'u PETP. C11 5903.2421 4'u PETP. C12 5903.2421 4'u PETP. C13 5903.2421 4'u CER 1 C14 5903.2421 4'u PETP. C15 5903.2471 4'u PETP. C16 5903.2471 4'u PETP. C17 5903.2471 4'u PETP. C18 1903.2471 4'u PETP. C19 5903.2471 4'u PETP. C1	C C C C C C C C C C	Part No.	Z2. S.97 RO CL 1.913.1 EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS SAL 10V 20% PETP, 60V, 70%, RMS PETP, 50V, 10%, RMS PETP, 50V, 10%, RMS PETP, 50V, 10%, RMS PETP, 50V, 50%, RMS PETP, 60V, 10%, RMS	117.21 0 MP 1 0 MP 1 0 MP 1 0 MP 2 0 P2 0 P7 0 P8 0 Q1 0 Q3 0 Q6 0 Q7 0 Q8 0 Q10 0 Q11 0 Q11 0 Q12 0 Q15 0 Q16 0 Q16 0 Q16 0 Q17 0 Q8 0 Q10 0 Q11 0 Q11 0 Q12 0 Q13	53.03.0165 op 5	18 20p 18 10p 19 17p 19 18 18p 19 18p 19	DIL-socket 0.3* DIL-socket 0.3* DIL-socket 0.3* DIL-socket 0.3* DIL-socket 0.3* DIL-socket 0.3* DIL-socket 0.3* DIL-socket 0.3* Stocker CIS parallesteck NC-WIGS-FET 100V, 7A PNF 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPS A 42 MF	0 R 71 0 R 72 0 R 73 0 R 73 0 R 74 0 R 75 0 R 76 0 R 76 0 R 77 0 R 78 0 R 78 0 R 80 0 R 80 0 R 80 0 R 80 0 R 80 0 R 80 0 R 80 0 R 80 0 R 80 0 R 90 0	57.11.3109 57.11.3109 57.11.3109 57.11.3109 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3102 57.11.3103	180 180 180 190 190 190 190 190 190 190 190 190 19	MF. 1%, 0.027 MF. 1%, 0.027
Pos. Part No. City. TyperVal. Descrit C1 59 22.6470 4**u EL. C2 59 22.6470 4**u EL. C3 59 22.6470 4**u EL. C4 59.60.0472 477 PETP, C5 59.06.5104 100n PETP, C6 92.26470 4**u EL. C7 59 22.26470 4**u EL. C8 99 22.4221 220u EL. C9 59 22.4221 220u EL. C10 59 31.6683 6th MPETR C11 59 25.6229 2u2 EL. C12 59.32.4471 4**Dp CER 19 C13 59.32.4471 4**Dp CER 19 C14 59.32.4471 4**Dp CER 19 C15 59.32.4471 4**Dp CER 19 C16 59.32.4471 4**Dp CER 19 C16 59.32.4471 4**Dp CER 19 C17 59.32.4471 4**Dp CER 19 C16 59.32.4471 4**Dp CER 19 C17 59.32.4471 4**Dp CER 19 C18 59.32.4471 4**Dp CER 19 C19 59.32.4471	Igition Idx. Pos.	Part No. Qy. Type ¹ 59.22.4221 2200 59.24.221 2200 59.24.221 2200 59.24.221 2200 59.24.221 2200 59.34.2470 470 59.05.5104 100 59.05.5104 100 59.05.5104 100 59.05.5104 100 69.05.5104 10	/al. Description EL 18V 20% RMS EL 18V 20% RMS EL 18V 20% RMS EL 18V 20% RMS EL 18V 20% RMS EL 18V 20% RMS EL 18V 20% RMS EL 18V 20% RMS EL 18V 20% RMS PETF, 50V, 10%, RMS PETF, 50V, 10%, RMS PETF, 50V, 10%, RMS PETF, 50V, 10%, RMS PETF, 63V, 5%, RMS PETF, 63V, 5%, RMS EL 40V 20% RMS EL 40V 20% RMS PETF, 63V, 5%, RMS CER, 20%, 50V CER 10%, 50V CER 10%, 50V PETF, 63V, 10%, RMS PETF, 63V, 10%, RMS PETF, 63V, 10%, RMS PETF, 63V, 10%, RMS PETF, 63V, 10%, RMS	117.21	\$3.03.0181 4 pp \$3.03.0181 4 pp \$3.03.0181 4 pp \$3.03.0181 4 pp \$3.03.0181 4 pp \$4.01.0270 2 pp \$4.01.0270 1	ee 20p sis 8p se 16p se 16p se 22p se 22p se 278p se 8	DIL -socket 0.3" DIL -socket 0.3" DIL -socket 0.3" DIL -socket 0.3" DIL -socket 0.3" DIL -socket 0.3" DIL -socket 0.3" DIL -socket 0.3" Black 2" 8 at 1.2 male Stecker CIS parallesteck Stecker CIS parallesteck Stecker CIS parallesteck NEW 150 MA 55V NPN 150 MA 45V MPS A 42 MPS A 42 MPS A 42 MPS A 42 MPS A 42 MPS A 42 MPS A 42 NPS A 42 NPS A 42 MPS A 42	0 R 71 0 R 72 0 R 73 0 R 73 0 R 74 0 R 75 0 R 76 0 R 76 0 R 77 0 R 78 0 R 78 0 R 80 0 R 80 0 R 80 0 R 80 0 R 80 0 R 80 0 R 80 0 R 80 0 R 80 0 R 90 0	57.11.3109 57.11.3109 57.11.3109 57.11.3109 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3102 57.11.3103	180 180 180 100 100 100 100 100 100 100	MF. 19, 0207 MF. 19, 0207
Pos. Part No. City. Type/Val. Description of the control of the co	C C C C C C C C C C	Part No.	Zal. Description EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS SAL 10V 20% PETP, 63V, 5%, RMS PETP, 50V, 10%, RMS PETP, 50V, 10%, RMS PETP, 50V, 10%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS DEL 40V 20% RMS PETP, 63V, 50%, RMS PETP, 63V, 50%, RMS PETP, 63V, 10%, RMS PETP, 63	117.21 0 MP 1 0 MP 1 0 MP 1 0 MP 2 0 P2 0 P7 0 P8 0 Q1 0 Q3 0 Q6 0 Q7 0 Q8 0 Q10 0 Q11 0 Q11 0 Q12 0 Q15 0 Q16 0 Q16 0 Q16 0 Q17 0 Q8 0 Q10 0 Q11 0 Q11 0 Q12 0 Q13	53.03.0165 op 5	18 20p 18 10p 19 17p 19 18 18p 19 18p 19	DIL-socket 0.3* DIL-socket 0.3* DIL-socket 0.3* DIL-socket 0.3* DIL-socket 0.3* DIL-socket 0.3* DIL-socket 0.3* DIL-socket 0.3* Stocker CIS parallesteck NC-WIGS-FET 100V, 7A PNF 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPS A 42 MF	O R 71 O R 72 O R 73 O R 74 O R 75 O R 76 O R 77 O R 78 O R 77 O R 88 O R 89 O R 80 O R 80 O R 80 O R 80 O R 80 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 100 O R 71	57.11.3109 57.11.3109 57.11.3109 57.11.3109 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3103 57.11.3102 57.11.3103	180 180 180 190 190 190 190 190 190 190 190 190 19	MF. 19, 0207 MF. 19, 0207
Pos. Part No. City. TypelVal. Descrit C1 59.22.6470 470 EL. C2 59.22.6470 470 EL. C3 59.22.6470 470 EL. C4 59.00.5104 100n PETP, C5 59.00.5104 100n PETP, C6 59.22.6470 470 EL. C7 59.22.6470 470 EL. C8 59.22.6470 470 EL. C9 59.22.2421 2200 EL. C10 59.31.6693 6lin MPETR C11 59.25.6229 2u2 EL. C12 59.32.4471 470p CR1 11 C13 59.32.4471 470p CR1 11 C15 59.32.4471 470p CR1 11 C15 59.32.4471 470p CR1 11 C15 59.32.4471 470p CR1 11 C15 59.32.4471 470p CR1 11 C15 59.32.4471 470p CR1 11 C15 59.32.4471 470p CR1 11 C15 59.32.4471 470p CR1 11 C15 59.32.4471 470p CR1 11 C15 59.32.4471 470p CR1 11 C15 59.32.4471 470p CR1 11 C15 59.32.4471 470p CR1 11 C15 59.32.4471 470p CR1 11 C15 59.32.4471 470p CR1 11 C15 59.32.4471 470p CR1 11 C15 59.32.4471 470p CR1 11 C15 59.32.4471 470p CR1 11 C15 59.32.4471 470p CR1 11 C15 59.33.4471 470p CR1 11 C15 59.33.4471 470p CR1 11 C17 59.05.523 22n PETP. C18 59.05.6223 22n PETP. C19 59.22.6220 22u EL. C20 59.34.5471 470p CR1 61	C C C C C C C C C C	Part No.	## D350 ## C20 ## C30 ## C20 ## C30 ## C30 ## C3	117.21 0 MP 1 0 MP 1 0 MP 1 0 MP 2 0 P 2 0 P 3 0 P 4 0 Q 5 0 Q 6 0 Q 6 0 Q 7 0 Q 8 0 Q 10 0 Q 11 0 Q 11 0 Q 12 0 Q 13 0 Q 16 0 Q 16 0 Q 17 0 Q 8 0 Q 10 0 Q 11 0 Q 12 0 Q 13 0 Q 14 0 Q 15 0 Q 16 0 Q 17 0 Q 18 0 Q 19 0 Q 20 0 Q 21 0 Q 22 0 Q 23 0 Q 24 0 Q 25 0 Q 25 0 R 1	53.03.0165 06 53.03.0168 06 53.03.0168 07 53.03.0168 07 53.03.0168 07 54.03.03.0168 07 54.03.03.0168 07 54.03.03.03 07 07 07 07 07 07 07	182 20p 185 8p 186 187 187 187 187 187 187 187 187 187 187	DIL-socket 0.3" DIL-socket 0.3	O R 71 O R 72 O R 73 O R 74 O R 75 O R 76 O R 77 O R 78 O R 77 O R 88 O R 89 O R 80 O R 80 O R 80 O R 80 O R 80 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 100 O R 71	57.11.3109 57.11.3109 57.11.3109 57.11.3109 57.11.3103	180 180 180 190 190 190 190 190 190 190 190 190 19	MF, 1%, 0207 MF, 1
Pos. Part No. Qty. TyperVal. Descrit C1 5922.6470 4"u EL 4 C2 5922.6470 4"u EL 4 C3 5922.6470 4"u EL 4 C4 590.6.0472 407 PETP, C5 590.6.5104 100n PETP, C6 5922.6470 4"u EL 4 C7 5922.6470 4"u EL 4 C8 5922.6470 4"u EL 4 C8 5922.6470 4"u EL 4 C8 5922.6470 4"u EL 4 C8 5922.6470 4"u EL 4 C8 5922.6470 4"u EL 4 C8 5922.6470 4"u EL 4 C8 5922.6470 4"u EL 5 C9 5922.6470 4"u EL 5 C1 5932.6471 4"0 PETP, C1 5932.6471 4"0 CER 1 C1 5932.4471 4"0	C 8 C 9	Part No. Qy. Type ¹ 59 22 4221 50 22 4221 50 22 4221 50 22 4221 50 22 4221 50 24 221 50 25 2421 50 26 50 50 50 50 50 50 50 50 50 50 50 50 50	/al. Description EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS PETF, 50V, 10%, RM5 PETF, 50V, 10%, RM5 PETF, 50V, 10%, RM5 PETF, 63V, 5%, RM5 EL 40V 20% RMS EL 40V 20% RMS EL 40V 20% RMS PETF, 63V, 5%, RM5 CER, 20%, 50V CER 10%, 50V PETF, 63V, 10%, RM6 D 1 N 4335 11 N 4937 B D 1 N 4355 11 N 4937 B D 1 N 4355 11 N 4937	117.21	\$3.03.0185 op 6 53.03.0181 op 6 53.03.0181 op 6 53.03.0181 op 6 53.03.0181 op 54.11.2007 op 54.01.0270 op 54.01.0270 op 54.01.0270 op 54.01.0270 op 54.01.0270 op 54.03.0515 op 50.03.0515 o	ee 20p sis 8p se 10p se 10p se 10p se 278p si 8p	DIL -socket 0.3" DIL -socket	O R 71 O R 72 O R 73 O R 74 O R 75 O R 76 O R 77 O R 78 O R 77 O R 88 O R 89 O R 80 O R 80 O R 80 O R 80 O R 80 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 100 O R 71	57.11.3109 57.11.3109 57.11.3109 57.11.3109 57.11.3103	180 180 180 190 190 190 190 190 190 190 190 190 19	MF, 1%, 0207 MF, 1
Pos. Part No. Qly. Typel/Val. Descrit C1 5922.6470 4"u EL 4 C2 5922.6470 4"u EL 4 C3 5922.6470 4"u EL 4 C4 590.6.0472 407 PETP, C5 590.6.104 1000 PETP, C6 5922.6470 4"u EL 4 C7 5922.6470 4"u EL 4 C8 5922.6470 4"u EL 4 C8 5922.6470 4"u EL 4 C8 5922.6470 4"u EL 4 C8 5922.6470 4"u EL 4 C8 5922.6470 4"u EL 4 C8 5922.6470 4"u EL 4 C8 5922.6470 4"u EL 5 C9 5922.6470 4"u EL 6 C9 5922.6470 4"u EL 6 C9 5922.6470 4"u EL 6 C9 5922.6471 4"0 PETP, C115 593.21.471 4"0p CER 1 C14 593.21.471 4"0p CER 1 C14 593.21.471 4"0p CER 1 C15 593.21.471 4"0p CER 1 C15 593.21.471 4"0p CER 1 C15 593.21.471 4"0p CER 1 C15 593.21.471 4"0p CER 1 C15 593.21.471 4"0p CER 1 C15 593.21.471 4"0p CER 1 C15 593.21.471 4"0p CER 1 C16 593.21.471 4"0p CER 1 C17 590.25.473 4"n 4"0p CER 1 C18 590.65.5473 4"n 4"0p CER 1 C19 592.62620 22u EL 2 C20 593.45.471 4"0p CER 6 C21 590.65.104 1000 PETP, C22 590.65.104 1000 PETP, C22 590.65.104 1000 PETP, C22 590.65.104 1000 PETP, C23 590.65.104 1000 PETP, C23 590.65.104 1000 PETP, C23 590.65.104 1000 PETP, C23 590.65.104 1000 PETP, C23 590.65.104 1000 PETP, C23 590.65.104 1000 PETP, C23 590.65.104 1000 PETP, C23 590.65.104 1000 PETP, C23 590.65.104 1000 PETP, C23 590.65.104 1000 PETP, C23 590.65.104 1000 PETP, C23 590.65.104 1000 PETP, C23 590.65.104 1000 PETP, C23 590.65.104 1000 PETP, C23 590.65.104 1000 PETP, C35 590.65.10	C C C C C C C C C C	Part No.	Zal. Description EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS SAL 10V 20% PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS DEL 40V 20% RMS PETP, 63V, 5%, RMS DEL 40V 20% RMS PETP, 63V, 5%, RMS DEL 40V 20% RMS DEL	117.21 0 MP 1 0 MP 1 0 MP 1 0 MP 2 0 P2 0 P3 0 P4 0 Q4 0 Q5 0 Q7 0 Q8 0 Q10 0 Q11 0 Q11 0 Q12 0 Q13 0 Q16 0 Q16 0 Q17 0 Q8 0 Q10 0 Q10 0 Q11 0 Q12 0 Q13 0 Q14 0 Q15 0 Q16 0 Q17 0 Q8 0 Q10 0 Q11 0 Q12 0 Q25 0 Q26 0 Q26 0 Q26 0 Q26 0 Q27 0 Q26 0 Q27 0 Q28 0 Q27 0 Q28 0 Q28 0 Q28 0 Q28 0 Q28 0 Q28 0 Q28 0 Q28 0 Q28 0 Q28 0 Q28 0 Q28 0 Q28 0 Q28 0 Q28 0 Q28 0 Q29 0 Q29 0 Q20 0 Q21 0 Q20 0 Q21 0 Q20 0 Q21 0 Q20 0 Q21	53.03.0165 06 53.03.0161 06 53.03.0161 06 53.03.0161 07 54.03.03.0161 07 54.03.03.0161 07 54.03.03.0361 07 54.03.0370 07 54.03.0370 07 54.03.0370 07 07 07 07 07 07 07	ee 20p sis 5p sis 16p sis 16p sis 16p sis 27p sis 17p sis 17p sis 27p sis 27p sis 27p sis 3p	DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" Stecker CIS parallestreck Stecker CIS parallestreck N-VINCS-PET 100V, 7A PNF 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPN 100m4 45V NPS 2380 NPS A 42 MPS	O R 71 O R 72 O R 73 O R 74 O R 75 O R 76 O R 77 O R 78 O R 77 O R 88 O R 89 O R 80 O R 80 O R 80 O R 80 O R 80 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 100 O R 71	57.11.3109 57.11.3109 57.11.3109 57.11.3109 57.11.3103	180 180 180 190 190 190 190 190 190 190 190 190 19	MF, 1%, 0207 MF, 1
Pos. Part No. Gry. TyperVal. Descrit C1 59.22.6470 4"u EL. C2 59.22.6470 4"u EL. C3 59.22.6470 4"u EL. C4 59.02.6470 4"u EL. C5 59.06.5104 1000 PETP, C6 59.22.6470 4"u EL. C7 59.22.6470 4"u EL. C8 59.22.6470 4"u EL. C8 59.22.6470 4"u EL. C8 59.22.6470 4"u EL. C8 59.22.6470 4"u EL. C9 59.22.6470 4"u EL. C1 59.32.6290 200 EL. C1 59.32.6290 202 EL. C1 59.32.4471 4"0p CER 11 C15 59.32.4471 4"0p CER 11 C15 59.32.4471 4"0p CER 11 C15 59.32.4471 4"0p CER 11 C15 59.32.4471 4"0p CER 11 C15 59.32.4471 4"0p CER 11 C15 59.32.4471 4"0p CER 11 C15 59.32.4471 4"0p CER 11 C16 59.32.4471 4"0p CER 11 C17 59.02.5473 4"n MPC, C18 59.06.523 2"n PETP, C19 59.22.6220 2"2 EL. C2 59.34.5471 4"0p CER 11 C17 59.02.5473 4"n MPC, C18 59.06.523 2"n PETP, C19 59.24.54471 4"0p CER 11 C2 59.06.5104 100n PETP, C2 59.06.5104 100n PETP, C24 59.06.5104 100n PETP, C24 59.06.5104 100n PETP, C24 59.06.5104 100n PETP, C24 59.06.5104 100n PETP, C24 59.06.5104 100n PETP, C24 59.06.5104 100n PETP, C24 59.06.5104 100n PETP, C24 59.06.5104 100n PETP, C24 59.06.5104 100n PETP, C24 59.06.5104 100n PETP, C24 59.06.5104 100n PETP, C24 59.06.5104 100n PETP, C24 59.06.5104 100n PETP, C24 59.06.5104 100n PETP, C24 59.06.5104 100n PETP, C24 59.06.5104 100n PETP, C24 59.06.5104 100n PETP, C25 59.06.5104 100n PETP, C25 59.06.5104 100n PETP, C24 59.06.5104 100n PETP, C25 59.06.5104 100n PETP, C25 59.06.5104 100n PETP, C25 59.06.5104 100n PETP, C25 59.06.5104 100n PETP, C25 59.06.5104 100n PETP, C25 59.06.5104 100n PETP, C25 59.06.5104 100n PETP, C26 59.06.5104 100n PETP, C26 59.06.5104 100n PETP, C26 59.06.5104 100n PETP, C26 59.06.5104 100n PETP, C26 59.06.5104 100n PETP, C26 59.06.5104 100n PETP, C26 59.06.5104 100n PETP, C26 59.06.5104 100n PETP, C26 59.06.5104 100n PETP, C26 59.06.5104 100n PETP, C26 59.06.5104 100n PETP, C26 59.06.5104 100n PETP, C26 59.06.5104 100n PETP, C26 59.06.5104 100n PETP, C26 59.06.5104 100n PETP, C26 59.06.5104 100n PETP, C26 59.06.5104 100n PETP, C26 59.06.51	C 8 C 9	Part No. Qy. Type ¹ \$9.22.4221 2200 \$0.22.4221 2200 \$0.22.4221 2200 \$0.22.4221 2200 \$0.34.2470 47p \$0.34.2470 47p \$0.36.5104 100n \$0.90.5.5104 100n \$0.90.	/al. Description EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS PETF, 50V, 10%, RMS PETF, 50V, 10%, RMS PETF, 50V, 10%, RMS PETF, 50V, 50%, RMS EL 40V 20% RMS EL 40V 20% RMS EL 40V 20% RMS PETF, 63V, 5%, RMS CER, 20%, 50V CER 10%, 50V CER 10%, 50V PETF, 63V, 10%, RMS D 1 N 4035 11 N 4037 5 D 1 N 403	117.21	\$3.03.0185 po \$5.03.01984 po \$5.03.03.01984 po \$5.03.03.01984 po \$5.03.03.01984 po \$5.03.03.01984 po \$5.03.03.0193 po \$5.03.03.0193 po \$5.03.0522 po \$5.03.0522 po \$5.03.0522 po \$5.03.0522 po \$5.03.0522 po \$5.03.0522 po \$5.03.0525 po \$5.03.0	ee 20p sis 8p sis 8p sis 18p sis 18p sis 18p sis 18p sis 18p sis 8p sis 18p sis 8p sis	DIL -socket 0.3" DIL -socket 0.3" DIL -socket 0.3" DIL -socket 0.3" DIL -socket 0.3" DIL -socket 0.3" DIL -socket 0.3" DIL -socket 0.3" DIL -socket 0.3" Stecker CIS parallesteck Stecker CIS parallesteck Stecker CIS parallesteck NEVMCS-FET 100V, 7A NPN 100mA 45V NPS A 42 MPS A 42 MPS A 42 MPS A 42 MPS A 42 NPS A	O R 71 O R 72 O R 73 O R 74 O R 75 O R 76 O R 77 O R 78 O R 77 O R 88 O R 89 O R 80 O R 80 O R 80 O R 80 O R 80 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 100 O R 71	57.11.3109 57.11.3109 57.11.3109 57.11.3109 57.11.3103	180 180 180 190 190 190 190 190 190 190 190 190 19	MF. 1%, 0.027 MF. 1%, 0.027
Pos. Part No. Qly. Typel/Val. Descrit C1 5922.6470 4**U EL 4 C2 5922.6470 4**U EL 4 C3 5922.6470 4**U EL 4 C4 590.6.0472 4**I7 PETP, C5 590.6.5104 1000 PETP, C6 5922.6470 4**U EL 4 C7 5922.6470 4**U EL 4 C8 5922.6470 4**U EL 4 C8 5922.6470 4**U EL 4 C8 5922.6470 4**U EL 4 C8 5922.6470 4**U EL 4 C8 5922.6470 4**U EL 4 C9 5922.6470 4**U EL 4 C8 5922.6470 4**U EL 4 C8 5922.6471 4**U EL 4 C8 5922.6471 4**U EL 4 C8 5923.2421 2200 EL 5 C12 593.21471 4**U CER 1 C14 593.21471 4**U CER 1 C14 593.21471 4**U CER 1 C15 593.21471 4**U CER 1 C15 593.21471 4**U CER 1 C16 593.21471 4**U CER 1 C17 590.5473 4**U CER 1 C18 590.55104 1000 PETP, C19 592.6200 22 C2 20 593.45471 4**U CER 6 C2 590.65104 1000 PETP, C22 590.65104 1000 PETP, C24 590.65104 1000 PETP, C24 590.65104 1000 PETP, C24 590.65104 1000 PETP, C25 590.65104 1000 PETP, C26 590.65104 1000 PETP, C26 590.65104 1000 PETP, C26 590.65104 1000 PETP, C26 590.65104 1000 PETP, C27 590.65104 1000 PETP, C27 590.65104 1000 PETP, C26 590.65104 1000 PETP, C27 590.65104 1000 PETP, C27 590.65104 1000 PETP, C27 590.65104 1000 PETP, C27 590.65104 1000 PETP, C27 590.65104 1000 PETP, C27 590.65104 1000 PETP, C27 590.65104 1000 P	C C C C C C C C C C	\$\begin{array}{cccccccccccccccccccccccccccccccccccc	Zal. Description EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS SAL 10V 20% PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS DEL 40V 20% RMS PETP, 63V, 5%, RMS DEL 40V 20% RMS PETP, 63V, 5%, RMS DEL 40V 20%, RMS DEL 4	117.21 0 MP 1 0 MP 1 0 MP 1 0 MP 2 0 P2 0 P3 0 Q1 0 Q4 0 Q5 0 Q6 0 Q7 0 Q8 0 Q10 0 Q	53.03.0165 06 53.03.0161 07 53.03.0161 07 53.03.0161 07 54.03.03.0161 07 54.03.03.0161 07 54.03.03.0361 07 54.03.0370 07 54.03.0370 07 54.03.0370 07 07 07 07 07 07 07	10	DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" Stecker CIS parallesteck Stecker CIS parallesteck NEVIDOS-PET 100V, 7A PNP 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPS A 42 MPS A 62 MPS NPN 100mA 45V JPET N-Channel MPS A 42 MPS A 62 MPS A 62 MPS NPN 100mA 45V JPET N-Channel MPS A 62 MPS NPN 100mA 15V JPET N-Channel MPS A 62 MPS NPN 100mA 15V JPET N-Channel MPS A 62 MPS NPN 100mA 15V JPET N-Channel MPS A 62 MPS NPN 100mA 15V JPET N-Channel MPS A 62 MPS NPN 100mA 15V JPET N-Channel MPS A 62 MPS NPN 100mA 15V JPET N-Channel MPS NPN 100mA 15V MPS NPN 100mA 15V MPS NPN 100mA 15V MPS NPN 100mA 15V MPS NPN 100mA 15V MPS NPN 100mA 15V MPS NPN 100mA 15V MPS NPN 100mA 15V MPS NPN 100mA 15V	O R 71 O R 72 O R 73 O R 74 O R 75 O R 76 O R 77 O R 78 O R 77 O R 88 O R 89 O R 80 O R 80 O R 80 O R 80 O R 80 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 100 O R 71	57.11.3109 57.11.3109 57.11.3109 57.11.3109 57.11.3103	180 180 180 190 190 190 190 190 190 190 190 190 19	MF, 1%, 0207 MF, 1
Pos. Part No. Oily. TyperVal. Descrit C1 59.22.6470 4"u EL. C2 59.22.6470 4"u EL. C3 59.22.6470 4"u EL. C4 59.02.6470 4"u EL. C5 59.065.104 1000 PETP, C6 59.22.6470 4"u EL. C7 59.22.6470 4"u EL. C8 59.22.6470 4"u EL. C7 59.22.6470 4"u EL. C7 59.22.6470 4"u EL. C8 59.22.6470 4"u EL. C1 59.31.6693 6ha MPETE C11 59.31.6693 6ha MPETE C11 59.32.6471 4"0p CER 11 C15 59.32.4471 4"0p CER 11 C16 59.32.4471 4"0p CER 11 C17 59.02.5473 4"n MPC, C18 59.06.523 2"2n PETP, C19 59.24.84471 4"0p CER 11 C17 59.02.5473 4"n MPC, C2 59.06.5104 100n PETP, C2 59.06.5104 100n PE	C C C C C C C C C C	Part No. Qy. Typu ⁰ 59.22.4221 2200 59.22.4221 2200 59.22.4221 2200 59.24.221 2200 59.24.221 2200 59.34.2470 47p 59.65.6100 100 59.65.6104	/AI. Description EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS PETF, 50V, 10%, RM6 PETF, 50V, 10%, RM6 PETF, 50V, 10%, RM6 PETF, 50V, 50%, RM5 PETF, 63V, 5%, RM5 PETF, 63V, 5%, RM5 EL 40V 20% RMS EL 40V 20% RMS PETF, 63V, 5%, RM5 CER, 20%, 50V CER 10%, 50V CER 10%, 50V DETP, 63V, 10%, RM6 D 1 N 4935 11 N 4937 B D 1 N 4935 11 N 4937 B D 1 N 4935 11 N 4937 B D 1 N 4935 11 N 4937 B D 1 N 4935 11 N 4937 B D 1 N 4935 11 N 4937 B D 1 N 4935 11 N 4937 B D 1 N 4935 11 N 4937 B D 1 N 4935 11 N 4937 B D 1 N 4935 11 N 4937 B D 1 N 4935 11 N 4937 B D 1 N 4935 11 N 4937 B D 1 N 4935 11 N 4937 B D 1 N 4935 11 N 4937 B D 1 N 4935 11 N 4937 B D 1 N 4935 11 N 4937 B D 1 N 4935 11 N 4937 B D 1 N 4935 10 N 493	117.21	\$3.03.0185 po \$5.03.01984 po \$5.03.03.01984 po \$5.03.03.01984 po \$5.03.03.01984 po \$5.03.03.01984 po \$5.03.03.0193 po \$5.11.20070 po \$5.03.05070	ee 20p sis 8p sis 8p sis 18p sis 18p sis 18p sis 18p sis 22p sis 8p sis	DIL -socket 0.3" DIL -socket 0.3" DIL -socket 0.3" DIL -socket 0.3" DIL -socket 0.3" DIL -socket 0.3" DIL -socket 0.3" DIL -socket 0.3" DIL -socket 0.3" Stearer CIS parallesteck Stecker CIS parallesteck Stecker CIS parallesteck Stecker CIS parallesteck NEW STATE 100V, 7A NPN 100mA 45V NPS A 42 MPS A 42 MPS A 42 MPS A 42 MPS A 42 NPS A 42	O R 71 O R 72 O R 73 O R 74 O R 75 O R 76 O R 77 O R 78 O R 77 O R 88 O R 89 O R 80 O R 80 O R 80 O R 80 O R 80 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 100 O R 71	57.11.3109 57.11.3109 57.11.3109 57.11.3109 57.11.3103	180 180 180 190 190 190 190 190 190 190 190 190 19	MF. 1%, 0.007 MF. 1%, 0.007
Pos. Part No. Gry. TyperVal. Descrit C1 59 22 6470 4"u EL 4 C2 59 22 6470 4"u EL 4 C3 59 22 6470 4"u EL 4 C4 59 05 6104 100n PETP. C5 59 05 6104 100n PETP. C6 59 22 2421 220u EL 1 C7 59 22 2421 220u EL 1 C8 59 22 2421 220u EL 1 C9 59 22 2421 220u EL 1 C10 59 31 8683 68n MPETF C11 59 25 8229 2u EL 2 C12 59 32 1471 4"0p CER 1 C14 59 32 1471 4"0p CER 1 C15 59 32 1471 4"0p CER 1 C15 59 32 1471 4"0p CER 1 C16 59 32 1471 4"0p CER 1 C17 59 22 8240 2u EL 2 C17 59 22 1471 4"0p CER 1 C18 59 32 1471 4"0p CER 1 C19 59 32 1471 4"0p CER 1 C19 59 32 1471 4"0p CER 1 C19 59 32 1471 4"0p CER 1 C19 59 32 1471 4"0p CER 1 C19 59 32 1471 4"0p CER 1 C19 59 32 1471 4"0p CER 1 C19 59 32 1471 4"0p CER 1 C19 59 30 1471 4"0p CER 1 C19 59 30 1471 4"0p CER 1 C19 59 30 1471 4"0p CER 1 C19 59 30 1471 4"0p CER 1 C19 59 30 1471 4"0p CER 1 C19 59 30 1471 4"0p CER 1 C19 59 30 1471 4"0p CER 1 C19 59 30 1471 4"0p CER 1 C19 59 30 1471 4"0p CER 1 C19 59 30 1471 4"0p CER 1 C19 59 30 1471 4"0p CER 1 C19 59 30 5104 100n PETP. C22 59 00 5104 100n PETP. C24 59 00 5104 100n PETP. C25 59 00 5104 100n PETP. C25 59 00 5104 100n PETP. C26 59 00 5104 100n PETP. C28 59 34 24710 4"p CER 6	C C C C C C C C C C	\$\begin{array}{cccccccccccccccccccccccccccccccccccc	Zal. Description EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS SAL 10V 20% PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 5%, RMS PETP, 63V, 10	117.21 0 MP 1 0 MP 1 0 MP 1 0 MP 2 0 P2 0 P3 0 Q1 0 Q4 0 Q5 0 Q6 0 Q7 0 Q8 0 Q10 0 Q	53.03.0165 06 53.03.0161 07 53.03.0161 07 53.03.0161 07 54.03.03.0161 07 54.03.03.0161 07 54.03.03.0361 07 54.03.0370 07 54.03.0370 07 54.03.0370 07 07 07 07 07 07 07	20	DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" Stecker CIS parallesteck Stecker CIS parallesteck NEVIDOS-PET 100V, 7A PNP 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPS A 42 MPS A 62 MPS NPN 100mA 45V JPET N-Channel MPS A 42 MPS A 62 MPS A 62 MPS NPN 100mA 45V JPET N-Channel MPS A 62 MPS NPN 100mA 15V JPET N-Channel MPS A 62 MPS NPN 100mA 15V JPET N-Channel MPS A 62 MPS NPN 100mA 15V JPET N-Channel MPS A 62 MPS NPN 100mA 15V JPET N-Channel MPS A 62 MPS NPN 100mA 15V JPET N-Channel MPS A 62 MPS NPN 100mA 15V JPET N-Channel MPS NPN 100mA 15V MPS NPN 100mA 15V MPS NPN 100mA 15V MPS NPN 100mA 15V MPS NPN 100mA 15V MPS NPN 100mA 15V MPS NPN 100mA 15V MPS NPN 100mA 15V MPS NPN 100mA 15V	O R 71 O R 72 O R 73 O R 74 O R 75 O R 76 O R 77 O R 78 O R 77 O R 88 O R 89 O R 80 O R 80 O R 80 O R 80 O R 80 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 100 O R 71	57.11.3109 57.11.3109 57.11.3109 57.11.3109 57.11.3103	180 180 180 190 190 190 190 190 190 190 190 190 19	MF. 1%, 0.007 MF. 1%, 0.007
9.0119 © C52 neu dazu x. Pos. Part No. Qly. Type/Val. Descrit 0 C 1 59.22.470 47u EL 4 0 C 2 59.22.470 47u EL 4 0 C 3 59.22.470 47u EL 4 0 C 4 59.06.104 100n PETP, 0 C 5 59.06.104 100n PETP, 0 C 8 59.22.4721 22:00 EL 2 0 C 9 59.22.4721 22:00 EL 2 0 C 9 59.22.4721 47u EL 4 0 C 9 59.22.4721 47u EL 4 0 C 10 59.31.6603 68h MPETF 0 C 10 59.31.6603 68h MPETF 0 C 11 59.23.1471 470p CERT 1 0 C 13 59.32.1471 470p CERT 1 0 C 14 59.32.1471 470p CERT 1 0 C 15 59.32.1471 470p CERT 1 0 C 16 59.32.1471 470p CERT 1 0 C 16 59.32.1471 470p CERT 1 0 C 17 59.02.5473 47u MPC, 0 C 18 59.03.1471 470p CERT 1 0 C 17 59.02.5473 47u MPC, 0 C 18 59.34.1471 470p CERT 1 0 C 17 59.02.5473 47u MPC, 0 C 18 59.34.1471 470p CERT 1 0 C 17 59.02.5473 47u MPC, 0 C 18 59.34.1471 470p CERT 1 0 C 18 59.34.1471 470p CERT 1 0 C 18 59.03.1471 100 MPC, 0 C 18 59.03.1471 100 MPC, 0 C 20 59.34.4471 100 MPC, 0 C 20 59.34.4471 100 MPC, 0 C 20 59.34.4471 100 MPC, 0 C 20 59.06.5104 100 MPTP, 0 C 20 59.06.5104 100 MP	C C C C C C C C C C	\$\begin{array}{cccccccccccccccccccccccccccccccccccc	AI. Description EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS EL 16V 20% RMS PETP, 50V, 10%, RMS PETP, 50V, 10%, RMS PETP, 50V, 10%, RMS PETP, 50V, 50%, RMS EL 40V 20% RMS EL 40V 20% RMS EL 40V 20% RMS EL 40V 20% RMS DETP, 50V, 50V, RMS PETP, 63V, 50%, RMS DETP, 63V, 50V, RMS PETP, 63V, 50V, RMS DETP, 63V, 10%, RMS DETP, 63V	117.21 0 MP 1 0 MP 1 0 MP 1 0 MP 2 0 P2 0 P3 0 P4 0 Q4 0 Q5 0 Q8 0 Q7 0 Q8 0 Q10 0 Q	53.03.0165 po 53.03.0161 po 53.03.0161 po 53.03.0161 po 54.03.03.0161 po 54.03.03.0161 po 54.03.03.0161 po 54.03.03.0161 po 54.03.03.03.03.03.03.03.03.03.03.03.03.03.	et 20p	DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" DIL-socket 0.3" Stecker CIS parallesteck Stecker CIS parallesteck NEVIDOS-PET 100V, 7A PNP 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPN 100mA 45V NPS A 42 MPS A 62 MPS NPN 100mA 45V JPET N-Channel MPS A 42 MPS A 62 MPS A 62 MPS NPN 100mA 45V JPET N-Channel MPS A 62 MPS NPN 100mA 45V JPET N-Channel MPS A 62 MPS NPN 100mA 65V	O R 71 O R 72 O R 73 O R 74 O R 75 O R 76 O R 77 O R 78 O R 77 O R 88 O R 89 O R 80 O R 80 O R 80 O R 80 O R 80 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 90 O R 100 O R 71	57.11.3109 57.11.3109 57.11.3109 57.11.3109 57.11.3103	180 180 180 190 190 190 190 190 190 190 190 190 19	MF. 1%, 0.007 MF. 1%, 0.007

Bargraph Analog Board ESE 1.913.118.81



AUX. Indicator Unit 1.913.130

Die vier Instrumente zeigen dauernd die Modulation der Hilfsausgänge AUX 1... 4 an. Um eine Uebereinstimmung mit dem Hauptinstrument zu erzielen, ist eine Wahl zwischen VU- und PPM Charakteristik möglich. Die Instrumente sind von hinten beleuchtet. Das oberste Instrument kann die Mono-Mischung eines Stereokanals anzeigen (nur bei Mischpulten der Serie 900).

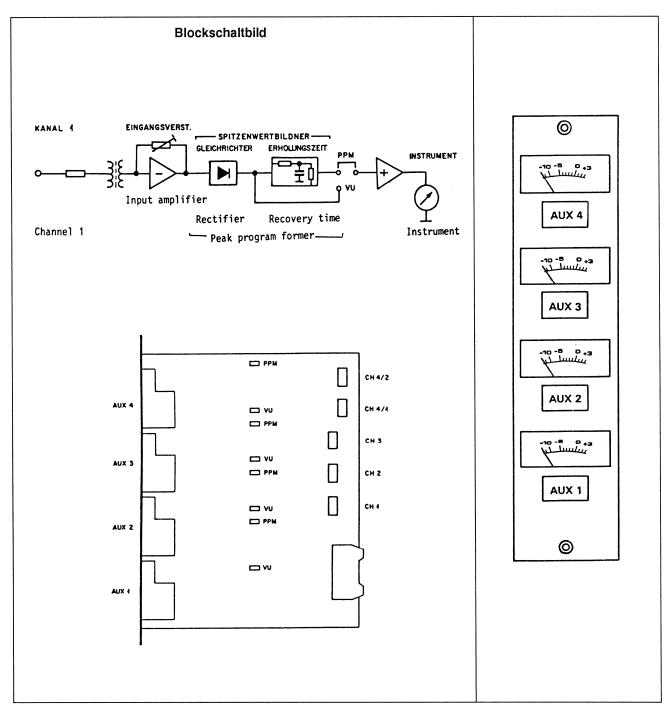


Fig. 1, 2, 3

1. Grundeinstellung

Wahl der Charakteristik

Brückenstecker auf den entsprechenden Stellen platzieren.

Charakteristik ist ebenfalls an der Lötseite der Printplatte bezeichnet mit:

V für VU und **P** für PPM

2. Technische Daten

Speisespannungen: + 15 V 40 mA

- 15 V 40 mA - 6 V 120 mA

Eingangswiderstand: Ri > 10 kOhm

Bereich: + 6 dBu ... + 15 dBu

Frequenzgang 30 Hz...15 kHz: - 1 dB

Dynamik:

PPM in Anlehnung an IEC 268 Norm.

Ansprechzeit in 10 ms auf ca. – 1 dB

Abfallzeit in 1,7 sec auf ca. - 20 dB

VU-Meter in Anlehnung an ANSI Norm.

Ansprechzeit in 200 ms auf ca.-1 VU

3. Mechanische Daten

Abmessungen Frontplatte: 170 x 40 mm

Tiefe: 135 mm

Gewicht: 200 g

AUX. Indicator Unit 1.913.130

The four instruments continuously indicate the modulation of the auxiliary outputs 1...4. To ensure that the readings correspond with those of the main instrument, a change-over between VU and PPM characteristic is possible. The instruments are illuminated from the back. The top instrument can indicate the mono-mix of a stereo-channel. (With audio consoles series 900 only).

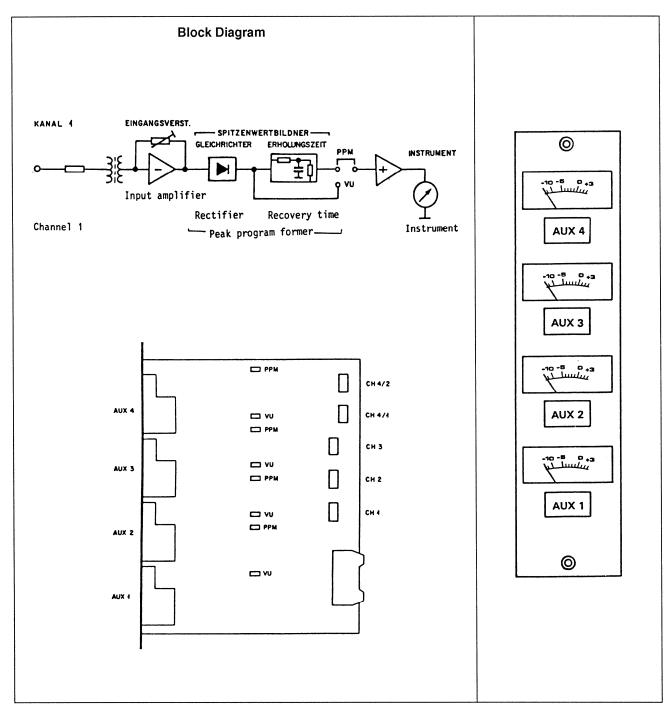


Fig. 1, 2, 3

1. Basic Setting

Selection of the characteristic

Insert jumper in the corresponding location.

The characteristic is aldo identified on the soldering side of the PCB with

V for VU and P for PPM

2. Specifications

Supply voltages: + 15 V 40 mA

- 15 V 40 mA - 6 V 120 mA

Input impedance: Ri > 10 kOhm

Range: + 6 dBu ... +15 dBu

Frequency response 30 Hz...15 kHz: -1 dB

Dynamic response:

PPM similar to IEC 268 standard.

Attack time 10 ms to ca.-1 dB
Return time 1,7 sec to ca.-20 dB

VU-Meter similar to ANSI standard.

Attack time 200 ms to ca.-1 VU

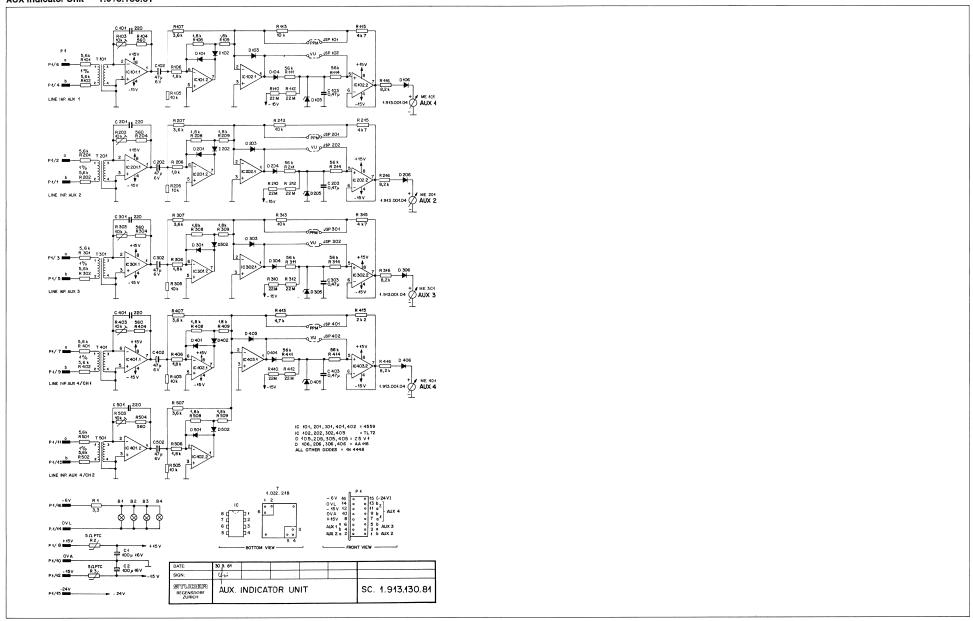
3. Physical Data

Dimensions of front panel: 170 x 40 mm

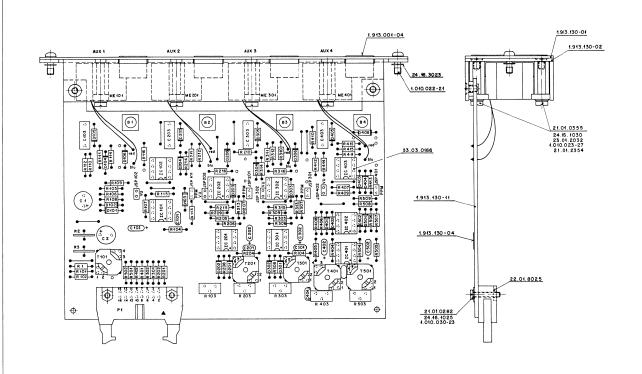
Depth: 135 mm

Weight: 200 g

AUX Indicator Unit 1.913.130.81







NDI POS NO I	PART NO	VALUE	SPECIFICAT	IONS/EQUIVALENT	NER
C 1	59.22.5101	100 UF	25V	EL	
C 2	53.22.5101	100µF	25V	EL	
(101	59.34.4221	220pF		CER	
C102	53.26.0470	47 MF	6 V	EL	
C103	59.02.0474	0,47 μ.	5 %	PC	-
C201	59.34.4221	22 Op F		CER	
C202	69.26.0470	47 MF	6V	EL	
C203	59.02.0474	0,47 pc F	5%	PC	-
C301	59.34.4221	220 pF		CER	
C 302	59.26.0470	47 MF	6 V	EL	
C 303	53-02.0474		5%	PC	
C401	59.34.4221	220pF		CER	
	59. 26.0470	47 MF	6V	EL	
C403	59. 02.0474	0,47µF	5%	PC	
C501	59.34.4221	220pF		CER	
C502	59.26.0470	47 pt	6V	EL	
B1÷4	51.02.0144	6V	30 m A		0
D101	50.04.0126	1N4448	· · · · · · · · · · · · · · · · · · ·	.51	
D102	50.04.0125	1N4448		-2/	
D113	50.04.0125	1N4448		51	
D104	50.04.0125	1N4448		5/	
D105	50.04.1112	ZD 5V1		51	
D106	50.04.0953	AA 116		GE	S, Se
MD DAT	E NAME	0 - 05R	417	51 - 512161	1111
3		C- SIEME		GE - GERMA	
2		Co - SESC		EL- ELECTRO	
D		De- 3 CSC	~	PC - POLYCAR	
0 20, 8.	86 ECKERT			CER - CERAM	
J 20, 0. 0	ER AUX. IV.	1		913 .130 .81 PAGE	

ND POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
D201	50.04.0125	1N4448	- 2/	
D202	50.04.0125	1N4448	51	
0203	50.04.0125	1N4448	S/	
D204	50.04.0125	N4448	S/	
D205	50.04.1112	ZD 5V1	SI	
D206	50.04.0953	AA 116	GE	5,50
0301	50.04.0125	11/14/18	13	
0.302	60.04.0125		13	
2323	50.04.0125		5/	
2304	50.04.0125		13.	
	50.04.1112		81	
D306	60.04.0363			5,50
0401	50.04.0125	1N4448	TV	
D402	50.04.0125	W4448	51	
0403	50.04.0125	1N4448	2/	
D404	50.04.0126		5/	
D405	E0.04.1112	ZD 5V1.	5/	
D406	50.04.0953	AA 116	G E	5,50
D501	50.04.0125	IN4448	S/	
D502	Ed. 04. 0125		S/	
JSP	54 .01.0020		JUMPER PLUG	В
JSJ	54.01.0021		JUMPER JACK	B
10.101	50.03.0107	RC4559 NB	DUAL OPA	RA,TI
10 102			DUAL BI-JFET LF 353 N	
-				

IND	DATE	NAME			
(4)			S - SIEHENS		ILICIUM
3			Se - SESCO	GE - G	ERMANIUM
2			B - BERG		
1			TO - TEXAS INSTR.		
	20.8.86	ECKERT	R - RAYTHEON		
=	TUDER	AUX IN	DICATOR	1.913.130.81	PAGE 2 OF 6

AUX Indicator Unit 1.913.130.81

IND	POS NO		PART NO	VALUE		SPECIFICATIONS/E	QUIVALENT	MFR
	/C 201	50	.09.0107	RC4559NB	DUAL			PA,T
	16 202	50	.09.0101	72.072.ACP	DUAL	Bi-FET	LF3531	1 11
-	10.301	/- A	.09.0107	PAFFGND	DUAI			RA.T
	16 302		.09.0101				1F353 N	71
T		30	.03.0707	720727167	DUAL	D/ 121	27 353 7/	+ ' '
	IC 401	50	.09.0107	RC4559NB	DUAL			
	16402	50	.09.0107	RC4559NB	DUAL	<u> </u>		RA,T.
-	16403	50	-09-0101	72.072.ACP	DUAL	BI-FET	LF 353 N	77
	0.4			2.2				
_	R1		.11,4339					P
_	R 2 R 3		.99.0209					P
	Κ Δ	51	, 99 .0209	5,611 77 C				
	R101	57	. 11 . 3562	5,6 k	1%	*		
	R102	57	.11.3562		1%		-	
٦,	9103	58	.01,7103	10k	LIN	10% TRI	4	AB. D
	R 104	57	11.4561	560				T
,	R 105	57	.11.4103	10 k				
	R 106	57	.11.4182	1,8 k	2%			
,	8107	57	.11.3362	3,64	2%			
	R108	57	.11.4182	1,8k	2%			
	R109	57	.11.4182	1,8k	20%			
	R110	57	.11.6226	22M	10%			
	R111	57	.11.4563	56k				
	R112		.11.6226		10%			
		57	.11.4103	10k				
	R114	57	.11.4563	56k				
ND	DATE	Ε	NAME					
4				RA - RA	,			
3						STRUMENT	2	
2					-	BRADLEY		
0		-		D - D17		4 T/ C_S		
\circ	20.8.2	86	ECKERT	P - PH/	LIPS			

ND POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFF
R 311	57.11.4563	56 k		
R 312	57.11.6226	22 M		
R 313	57.11.4103	10 k		
R 314	57.11.4563	56k		
R 315	57.11.4492	4,7k		
R316	57.11.4822	8,24		
R 401	57.11.3562	5,6k	1%	
R 402	57.11.3562	5,6k	10%	
R 403	58.01.7103	10k	LIN 10% TRIM	AB, I
R404	57.11.4561	560		
R405	57.11.4103	10k		
R406	57,11,4182	1,8k	2%	
R407	57.11.3362	3,6k	2%	
R408	57.11.4182	1,8k	2%	
R 403	57.11.4182	1,84	2%	
R410	57.11.6226	22 M		
R411	57.11.4563	56k		
R412	57.11.6226	22M		
R 413	57.11.4472	4,7k		
R414	57.11.4563	56k		
R415	57.11.4222	2,2k		
R416	57.11.4822	8,2k		
R 501	57.11.3562	5,6k	1%	
R 502	57.11.3562	5,6k	1%	
R503	58.01.7103	10k	LIN 10% TRIM	AB, I
R504	57.11.4561	560		-7-
R 505	57.11.4103	10k		
R500	57.11.4182	1.8k	2%	

L_I	1300 57	. 11.4184	11,88 2 10
IND	DATE	NAME	
4			AB- ALLEN BRADLEY
3			D - DIPLOMATICS
2			
1			
0	20.8.86	ECKERT	
9	TUDER	AUX. IN	DICATOR 1. 913.130.81 PAGE 5 OF 6

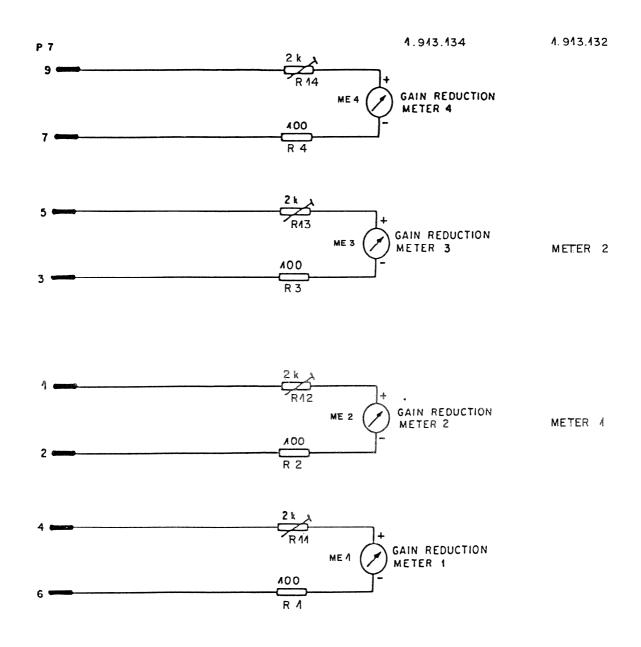
ND POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
R 115	57.11.4472	4,7k		
R 116	57.11.4822	8,2 k		
R 201	57.11.3562	5,6k	10%	
R 202	57.11.3562	5,6k	10%	
R 203	58.01.7103	10k	LIN 10% TRIM	
R 204	57.11.4561	560		
R 205	57.11.4103	10k		
R 206	57.11.4182	1,8k	2%	
R 207	57.11.3362	3,6k	2%	
R 208	57.11.4182	1,8k	2%	
R 209	57.11.4182	1.8k	2%	
R 210	57.11.6226	22M		
R211	57.11.4563	56k		
R212	57.11.6226	22M		
R 213	57.11.4103	10k		
R214	57.11.4563	56k		
R215	57.11.4472	4,7k		
R216	57.11.4822	8,2k		
R301	57.11.3562	56 k	1%	
R302	57.11.3562	56 k	106	
R303	58.01.7103	104	LIN 18% TRIM	
R304	57.11.4561	560		
R305	57.11.4103	10k		
R306	57.11.4182	1,84	2%	
R 307	57.11.3362	3,64	2%	
R308	57.11.4182	1,8k	2%	
R309	57.11.4182	1,84	2%	
R310	57.11.6226	22M		

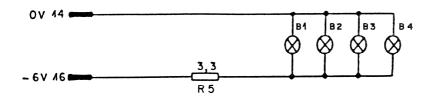
7370 37	.117,0220	2214			
IND DATE	NAME				
4					
3					
2					
1					
0 20.8.86	ECKERT				
STUDER	AUX. IN	DICATO	OR.	1.913.130.81	PAGE 4 OF 6

ND POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
R507 8	57.11.3362	3,64	2%	
R508 3	57.11.4182	1,8k	2%	
R503 ±	57.11.4182	1,8K	2%	
T101	1.022.218	1.1	LINE TRAFO	ST
7201	1.022.218		LINE TRAFO	57
7301	1.022.218		LINE TRAFO	ST
T401	1.022.218		LINE TRAFO	57
T501	1.022.218		LINE TRAFO	57
XB.	53.04.0118		LAMP HOLDER	
XIC .	53.03.0166		IC HOLDER	
MENON 1	913.001.04	120 p. A	INDICATOR	SÎ
ME201 1.	913.061.04	120pe A	INDICATOR	ST
ME301 1.	913.001.04	120 pc A	INDICATOR	ST
ME401 1.	313,001.04	120 µ A	INDICATOR	ST
P 1.	54.14.2013			
ND DATE	NAME			

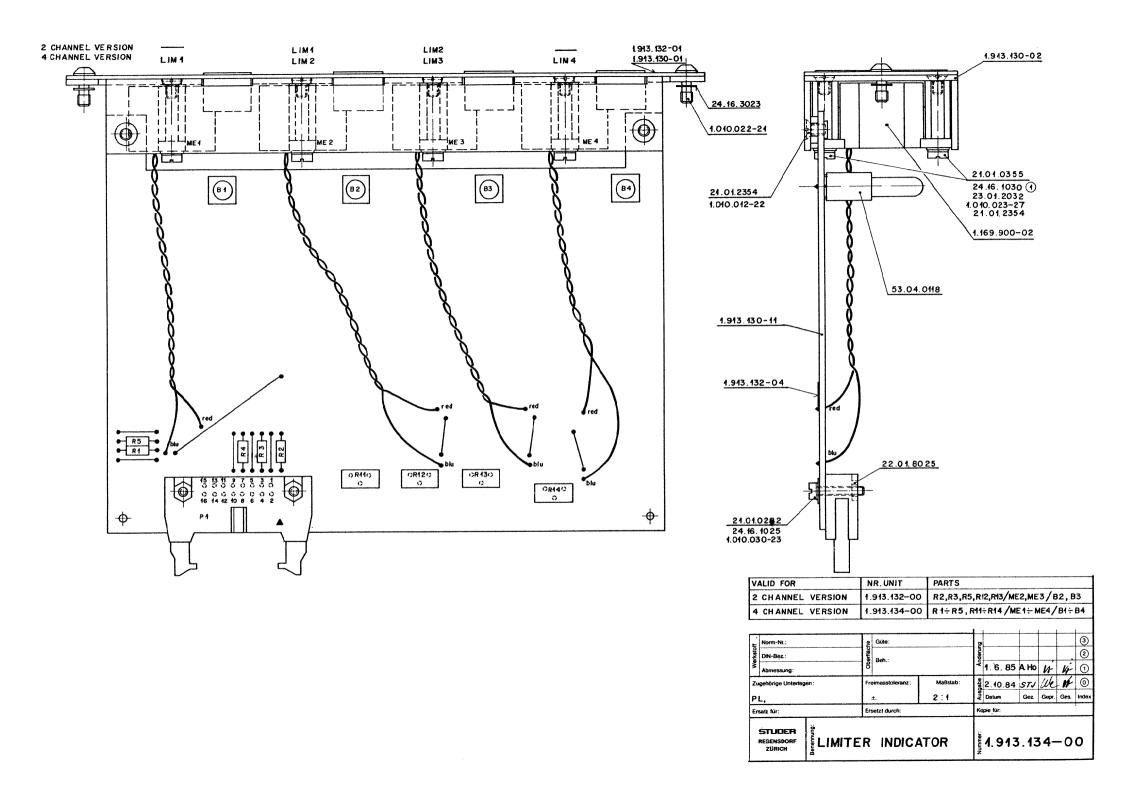
1.913.130.81 PAGE 6 OF 6

STUDER AUX. /NDICATOR





DATE:	28.9.84	9.10.84		PRIN	T NR. 4.943.430-44
SIGN:	We	we			
STUDER REGENSDORF ZÜRICH		N REDU	 	SC SC	1.913.132 1.913.134



IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	B1+4	51.02.0144	6v	30 m A	0
	21	57.M. 4101	100		
	122	57.11.4101	100		
	RZ	57.11. 4101	100		
	R4	57. M. 4101	100		
	28	57.M.4339	33		
	RM	58.01.7202	24	LIN 10% TRIM	AB, D
	RAZ	58.01.7202	24	UN 10% TRIM	48, D
	RAZ	58.01.7202	24	LIN 10% TRIH	48,D
	214	58.01.7202	24	UN 10% TRIM	18.0
(D)	MEA	1. 169. 300,02	120 p. A	NOOCATOR	57
(3)	ME2	1.169,900.02	nonA	IN DI CATOR	72
1	ME 3	1. 169,900,02	nous	WDICATOR	77
(A)	HE4	1.169,900,02	NOMA NOMA NOMA	INDICATOR	72
	PA	54.14.2013			
	XB	53.04.0M8		LAMP HOLDER WZx4,60	
-	***************************************				·
_			<u> </u>		
	•				
IND	DA	TE NAME	1		

IND	DATE	NAME			
4			0 - OSRAM		
3			ST - STUDER		
2			AB-ALLEN BRADLEY		
1	24.4.89	We	D - DIPLOMATICS		
0	10.1284	uwe			
5	STUDER	LIMITER	INDICATOR	1.913.134.00	PAGE / OF/

Signalization Indication Unit 1.913.140 / 41

SIGN / INDICATION UNIT

Zentrale Bedienungs- und Anzeigeeinheit für die Studio Signalisation, für PFL und Mixdown, Warnsignale für Overload und On Air.

MIXDOWN-Taste zum Umschalten aller Eingangseinheiten auf Tape (nur bei Mehrkanalversion /1.913.141)

PFL Rückstelltaste für alle PFL- und P.Solo-Tasten. LED leuchtet sobald eine oder mehrere PFL / P.Solo Tasten gedrückt sind.

OVERLOAD zeigt die Uebersteuerung eines oder mehrerer Eingänge an.

ON AIR Rückmeldelampe des Zustandes der Sendeleitung im Schaltraum.

STUDIOSIGNALISATION

CALL Impulstaste für gelbes Licht im Studio, gelbe LED zur Rückmeldung.

READY Haltende-Taste für grünes Vorbereitungssignal mit preparation signal with status LED. Zustandsanzeige am LED.

ON Haltende-Taste für rotes Studio-Warnsignal. Das Signal wird durchgeschaltet sobald wenigstens bei einer Eingangseinheit der Mikrofonkanal durchgeschaltet ist.

Central operating and indication unit for the studio signalling, for PFL and mix down, warning signals for overload and on air.

SIGN / INDICATION UNIT

MIXDOWN button for changing over all input units to tape (only for multichannel version 1.913.141).

PFL reset button for all PFL and P. SOLO buttons. LED turns on as soon as one or more PFL / P. SOLO buttons have been pressed.

OVERLOAD indicates that an overload condition on one or several inputs have been detected.

The ON AIR pilot lamp signals the status of the on air line in the master control room.

STUDIO SIGNALLING

CALL, momentary-action push button for yellow light in the studio, yellow status LED.

READY, self-locking push button for green

ON, self-locking push button for red studio warning signal. The signal is connected through as soon as the microphone channel of at least one input unit and one master channel has been connected through.

0 RESET OVERLOAD O 0 ON AIR CALL READY ON STUDIO 0

Bemerkung:

Die Zusammenhänge der

PFL - Funktion Mix-Down - Funktion Sign - Funktion

werden in anderen Beschreibungen aufgezeigt.

NOTE

The interaction between

PFL function Mix down function Sign function

is described elsewhere.

TECHNISCHE DATEN

+ 15 V 5 mA Speisespannungen: - 15 V 5 mA - 6 V variabel variabel

Specifications

+15 V Supply voltages 5 mA -15 V 5 mA - 6 V variable variable

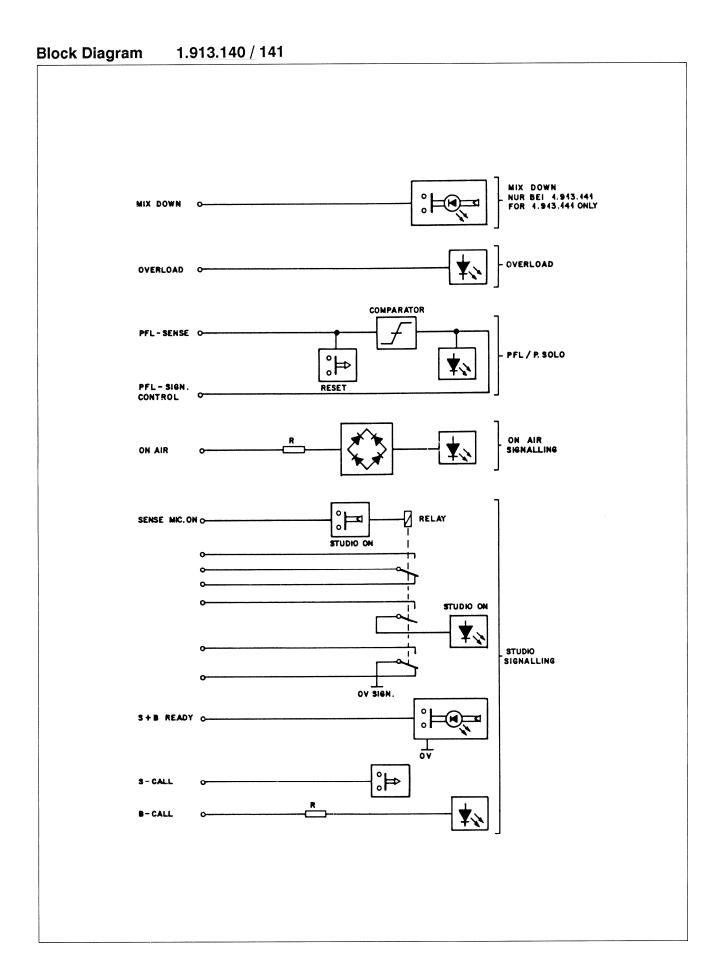
MECHANISCHE DATEN

Frontplatte dunkelgrau gespritzt

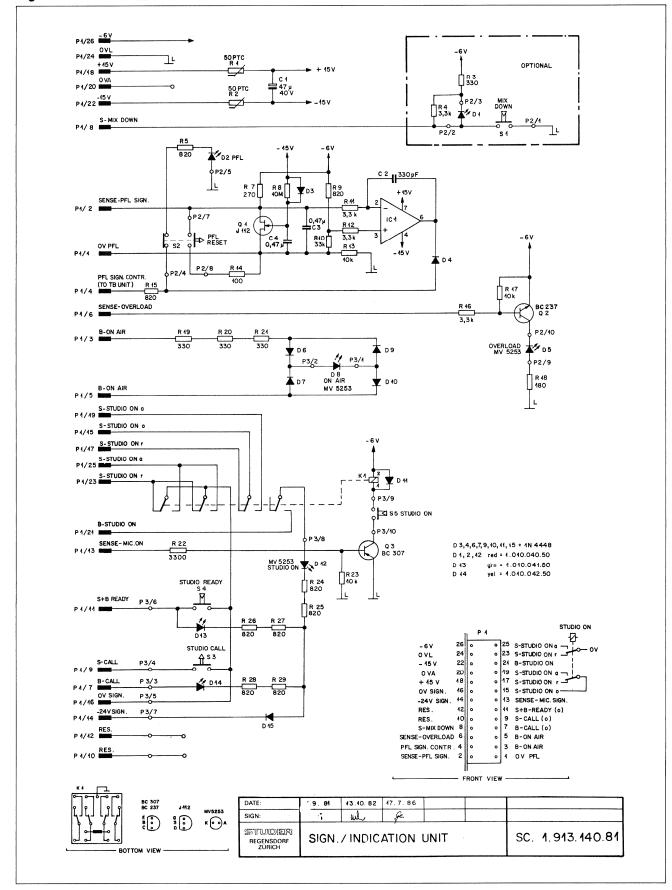
Abmessungen Frontplatte 170 x 40 mm Tiefe 135 mm Gewicht 170 ar

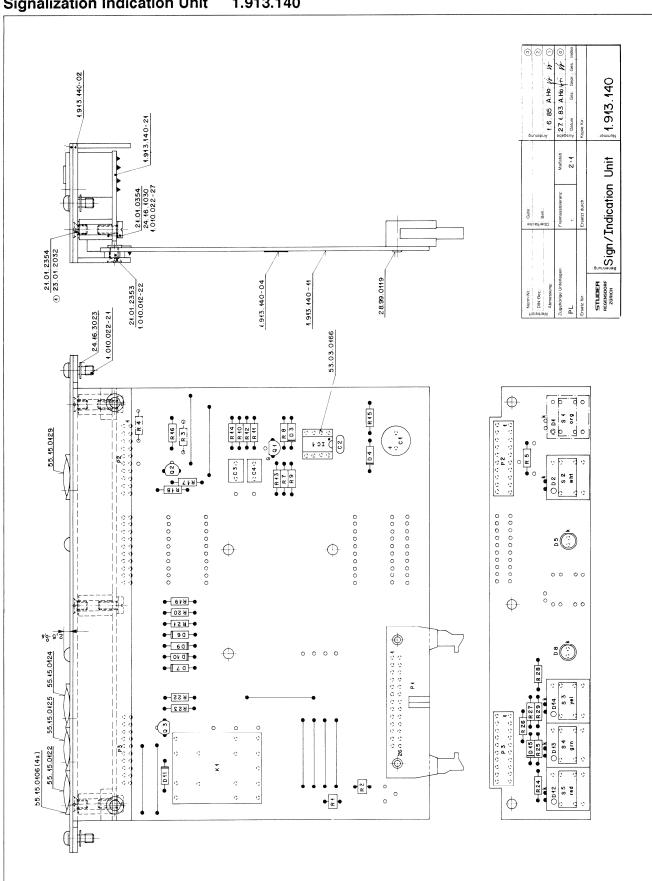
PHYSICAL DATA

Front panel laquered dark grey Dimensions of front panel 170 x 40 mm 135 mm Depth 170 g



Signalization / Indication Unit 1.913.140.81





Signalization Indication Unit 1.913.140

Signalization / Indication Unit 1.913.140.81

ND POS NO	PART NO	VALUE	SPE	CIFICATIO	NS/EQUIVA	LENT	MER
C 1	59.22.6470	47MF	40 V		E	LECTROL.	
C 2	59.34.4331				C	ERAMIC	
C 3	59.06.0474	0,4745			ro	21571185115	
C 4	59.06.0474	0,47µF			PO.	LKTYRENE	
01	50.04,2121	COY 41N	LED	RED	(MIX	DOWN)	7
02	50.04.2121	CQY 41N	LED	RED			7
0 3	50.04.0125	IN4448					
D 4	50.04.0125						
05	50.04.2111	HV5753	LED	RED			MS
06	50.04.0125						
0 7	50,04,0125						
08	50.04.2111	MV5753	LED	RED			MS
D 9	50.04.0125	N4448					
D 10	50.04.0125	1N4448					
D 11	50.04.0125	1N4448					
D 12	50.04.2121	COY41N	LED	RED			7
D 13	50.04.2132			GRN			T
D 14	50.04.2133		LED	YEL			T
D 15	50.04.0125	1N 4448					
161	50.09.0103	TL 071CP				LF 351	77
KI	56.04.0146	40	RELAY				SA
01	50.03.0350	7 112	FET				SX
22	50.03.0436					BC 550 B	
23	50.03.0515					BC 560 B	//
NDI DAT		1	P				
4		SA - SAG	IER SDS		1-	175	
3		T - TE	LEFUNKE	W	2	SIE HENS	
2		MS - MO			P-	PHILIPS	
①		TI - TE		TR.			
0 17.7.86	ECKERT	SX - SIL	/ CON IX				

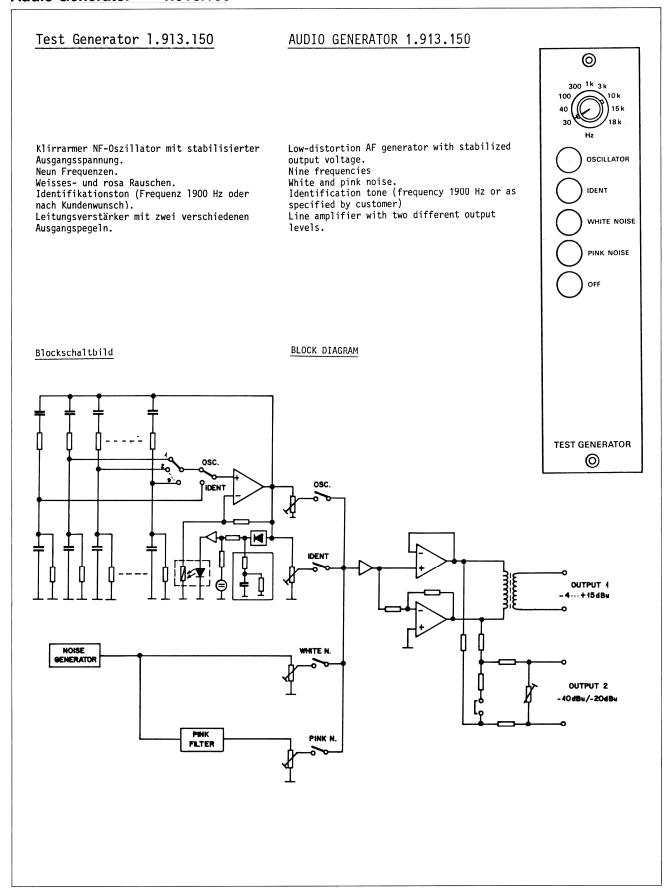
ND POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
'R 1	57.99.0206	50	PTC	P
R 2 R 3	57,99.0206	50	PTC	P
R 3	57.11.4331	330	(MIX DOWN) (MIX DOWN)	
R 4	57.11.4332	3,3k	(MIX DOWN)	
	57.11.4821	820		
R 6		_		
R 7	57.11.4271	270 🕰		
R 8	57.11.4106	10 M		
R 9	57.11.4821	820		
R 10	57.11.4333	33k		
R 11	57.11,4332	3,3 k		
R 12	57.11,4332	3,3 k		
R 13	57.11.4103	10k		
R 14	57.11.4101	100		
R 15	57.11.4821	820		
R16	57.11.4332	33k		
R 17	57.11.4103	10 K		
R 18	57.11.4181	180		
R 19	57.11.4331	330		
R 20	57.11.4331	330		
R 21	57.11.4831	330		
R 22	57.11.4332	3,3k		
R 23	57.11.4103	10 K		
R 24	57,11.4821	820		
R 26	57.11.4821	820		
R 26	57.11.4821	820		
R 27	57.11.4821	820		
R 28	57.11.4821	820		
P. 29	57.11.4821	820		
ND DAT	E NAME			
4		P-PHI	LIPS	

STUDER SIGN/INDICATION UNIT 1.913.140.81 PAGE 2 OF 3

0 17.7.86

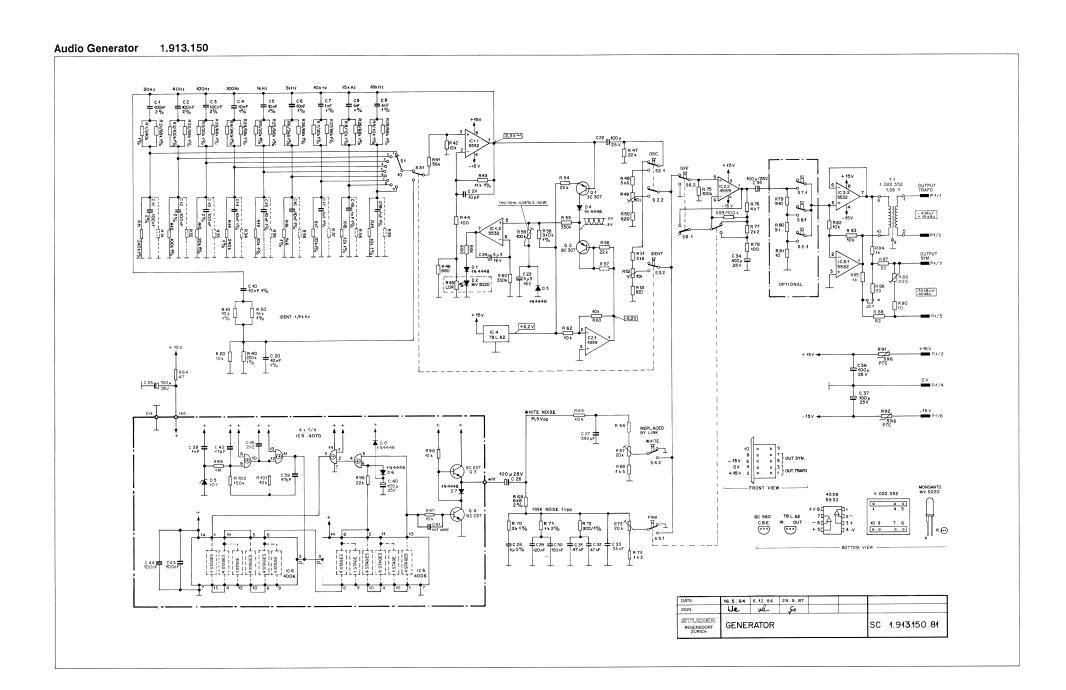
ND	POS	NO		ART N		VALUE		FICATIONS/E			MF
	5	1	55.	15	.0113	LATCHING	MODULAR	SWITCH	(MIX	DOWN	4
	S	2	55.	15.	0112	MOMENTARY	MODULAR	SWITCH			U
	S	3	56.	10.	0112	MOMENTHOY	110001111	SWITCH			41
	S	4					MODULAR				U
	S	5	55.	15	.0113	LATCAING	MODULAR	SWITCH			U
-		+									+
-		\top									
_		1									-
-		-									-
	-									-	
		-									
		+									-
					,						
											_
		_									-
		_									-
_											-
	-	+									+-
	-										
_											<u></u>
ND	-	DATE	-	N.	AME	U- UNIM	15.0				
<u>4</u> 3			-			U- UNIM	C C				
(<u>3</u>)			-			+					
1	\vdash					1					
	17	7 80	-	EUNL	OT	1					
Ō		7,80 JDE		ECKE	RT	IDICATION		1. 0.10	4.4.	0.4	

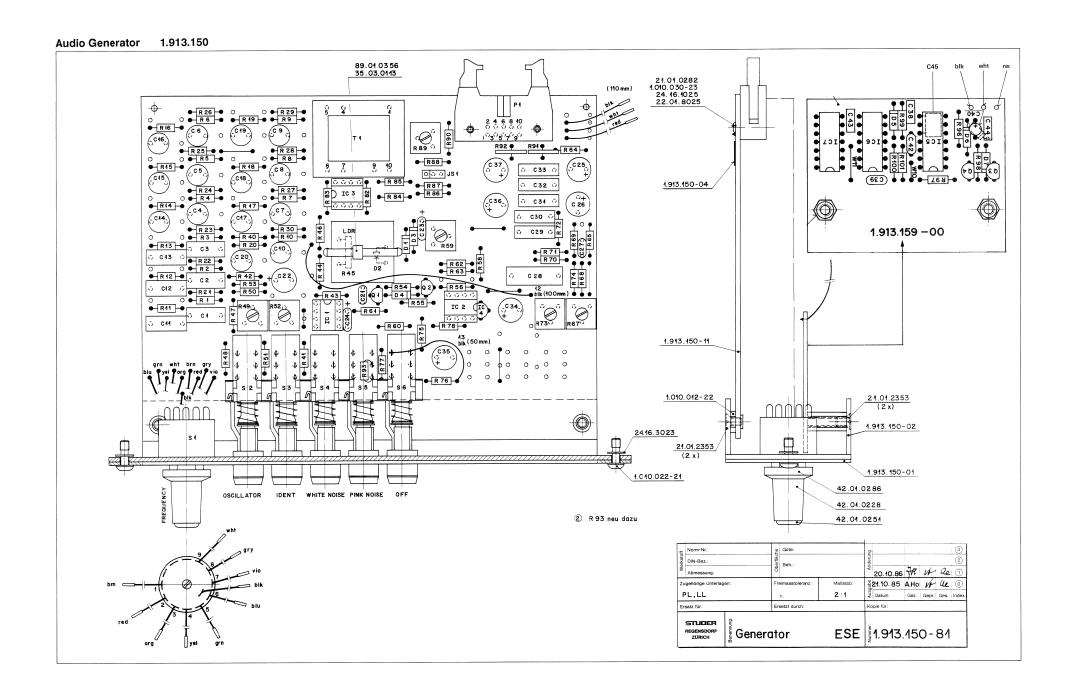
Audio Generator 1.913.150



Audio Generator 1.913.150

Technische Daten	SPECIFICATIONS					
Teelin 130/10 Buttern	Output frequencies					
Ausgangsfrequenzen Neun Festfrequenzen mit Drehschalter wählbar.	Nine fixed frequencies, selectable with rotary switch	30 Hz) 40 Hz) 100 Hz) 300 Hz) 1 kHz) 3 kHz) + 5 % 10 kHz) 15 kHz) 18 kHz)				
Identifikationston	Identification frequency	1,9 kHz + 10 Hz				
Einschwingzeit 30 Hz 1 kHz	Settling time 1 kHz 30 Hz	~4 sec ~1 sec				
Ausgang 1	Output 1					
symmetrisch, erdfrei Ausgangspegel mit Trimmpotentiometer einstellbar	Balanced and floating Output level variable with trimmer potentiometer	-4 dBu+15dBu				
Ausgangsimpedanz	Output impedance	<40 Ohm				
Lastwiderstand	Load impedance	≥200 Ohm				
Frequenzgang	Frequency response	<u>+</u> 0,2 dB				
Klirrfaktor 30 Hz18 kHz 100 Hz10 kHz	Harmonic distortion 30 Hz 18 kHz 100 Hz 10 kHz	<0,1 % <0,05 %				
Ausgang 2	Output 2					
symmetrisch Ausgangspegel einstellbar	Balanced Output level adjustable	-10dBu/-20dBu				
Ausgangsimpedanz	Output impedance	~1 k0hm				
<u>Weisses Rauschen</u>	White noise	disital maisa sayasa				
Frequenzgang 20 Hz . 20 kHz	Frequency response 20 Hz 20 kHz	<pre>digital noise source with pseudo-random sequence generator + 1 dB</pre>				
Rosa Rauschen	Pink noise					
Frequenzgang	Frequency response	4 stage cascade filte -3dB / octave <u>+</u> 1 dB				
Auf Wunsch schaltbarer Abschwächer	Switchable attenuator available on request	0/-10/-20 dB				
tromversorgung	Supply					
etriebsspannung	Operating voltage	<u>+</u> 15 V				
tromverbrauch	Connected load	30 mA				
bmessungen	Physical data					
rontplatte	Front panel sprayed charcoal grey	170 x 40,4 mm				
iefe über alles	Dimensions of front panel Over all depth	135 mm				
ewicht	Weight	approx. 250 gr				



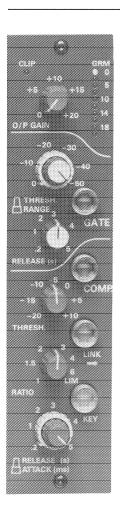


IND. POS.NO. PART NO. VALUE SPECI	IFICATIONS / EQUIVALENT MANUF.	IND. POS.NO. PART NO. VALUE SPECIFICATIONS /	EQUIVALENT MANUF.
C1 59.09.0234 100 nF 2% C2 39.99.0234 100 nF 2% C3 39.99.0234 100 nF 2% C4 39.05.1103 10 nF 2% C4 59.05.1103 10 nF 2% C5 59.05.1103 10 nF 2% C5 39.05.1103 10 nF 2% C7 39.05.1102 1 nF 2% C7 39.05.1102 1 nF 2% C10 39.05.1102 1 nF 2% C10 39.05.1102 1 nF 2% C10 39.05.1102 1 nF 2% C11 39.09.0234 100 nF 2% C12 39.09.0234 100 nF 2% C13 59.09.0234 100 nF 2% C13 59.09.0234 100 nF 2% C13 59.09.0234 100 nF 2% C14 59.05.1103 10 nF 2% C15 59.05.1103 10 nF 2% C16 59.05.1103 10 nF 2% C17 39.05.1102 1 nF 2% C18 39.05.1102 1 nF 2% C18 39.05.1102 1 nF 2% C19 59.05.1103 10 nF 2% C19 59.05.1103 10 nF 2% C19 59.05.1103 10 nF 2% C19 59.05.1103 10 nF 2% C19 59.05.1103 10 nF 2% C20 59.05.1103 10 nF 2% C21 59.05.1103 10 nF 2% C23 59.05.1103 10 nF 2% C24 59.05.1103 10 nF 2% C25 59.22.5101 100 uF -20% C25 59.22.5101 100 uF -20% C26 59.22.5101 100 uF -20% C27 59.34.5391 390 nF	PE	R56 57.11.4223 22 kOhm 5% 0.25% MF R576 57.11.2914 not used R58 57.11.2914 not used R58 58.01.8104 100 kOhm 10 0.25% MF R60 57.11.4034 330 kOhm 5% 0.25% MF R61 57.11.4031 10 kOhm 5% 0.25% MF R62 57.11.4103 10 kOhm 5% 0.25% MF R62 57.11.4103 10 kOhm 5% 0.25% MF R63 57.11.4103 10 kOhm 5% 0.25% MF R64 57.11.4103 10 kOhm 5% 0.25% MF R65 57.11.4103 10 kOhm 5% 0.25% MF R66 57.11.403 10 kOhm 5% 0.25% MF R67 58.01.8203 20 kOhm 10% 0.25% MF R67 58.01.8203 20 kOhm 10% 0.25% MF R67 58.01.8203 20 kOhm 22 0.25% MF R67 57.11.4021 kOhm 22 0.25% MF R77 57.11.4021 kOhm 22 0.25% MF R77 57.11.4021 kOhm 23 0.25% MF R77 57.11.4021 kOhm 23 0.25% MF R77 57.11.4021 kOhm 23 0.25% MF R77 57.11.4021 kOhm 23 0.25% MF R77 57.11.4021 kOhm 23 0.25% MF R77 57.11.4021 kOhm 23 0.25% MF R77 57.11.4022 kOhm 10% 0.50% KF R77 57.11.4021 kOhm 23 0.25% MF R78 57.11.4021 kOhm 23 0.25% MF R79 57.11.4021 kOhm 23 0.25% MF R79 57.11.4021 kOhm 23 0.25% MF R79 57.11.4021 kOhm 23 0.25% MF R88 57.11.4023 lOk kOhm 33 0.25% MF R89 57.11.4023 lOk kOhm 33 0.25% MF R89 57.11.4023 lOk kOhm 33 0.25% MF R89 57.11.4020 kOhm 24 0.25% MF R89 57.11.4020 kOhm 24 0.25% MF R89 57.11.4020 kOhm 24 0.25% MF R89 57.11.4020 kOhm 24 0.25% MF R89 57.11.4020 kOhm 24 0.25% MF R89 57.11.4020 kOhm 24 0.25% MF R89 57.11.4020 kOhm 24 0.25% MF R89 57.11.4020 kOhm 24 0.25% MF R89 57.11.4020 kOhm 24 0.25% MF R89 57.11.4020 kOhm 24 0.25% MF R89 57.11.4020 kOhm 24 0.25% MF R89 57.11.4020 kOhm 24 0.25% MF R89 57.11.4020 kOhm 24 0.25% MF R80 57.11.4020 kOhm 24 0.25% MF R80 57.11.4020 kOhm 24 0.25% MF R80 57.11.4020 kOhm 24 0.25% MF R80 5	imming resistor imming resistor imming resistor 13911 option 13910 option 13100 option
C36 59.22.5131 100 uF -20% C37 59.22.5131 100 uF -20% D1 50.04.0125 1N4448	t 16V EL t 16V EL	890 57.11.4.100 10 Chm 5% 0.25M MF R91 57.99.0209 5.6 Chm R92 57.99.0209 5.6 Chm PfC R93 57.11.4.104 100 KChm 5% 0.25M MF	Philips Nr.2322 662 91005 Philips Nr.2322 662 91005
02 50.04.2104 MY5020 red 03 50.04.0125 1N4448 04 50.04.0125 1N4448	any Cilix any any	S2 55.13.0025 1e9 rotary-switch S2 55.15.0005 2eU 2u gold	St
IC1 50.09.0105 NE5532 N dual IC2 50.09.0107 R65539 N dual IC3 50.69.0107 R65539 N dual IC4 50.10.0101 78622 N dual IC4 50.10.0101 7862 6.2V	op. amp. Ti,Sig,Ra op. amp. Ti,Sig,Ra	53 2#U see S 2 54 2#U see S 2 55 2#U see S 2 55 2#U see S 2 55 2#U see S 2 57 2#U 2u gold optio 58 2#U see S 7 optio	n
Q1 50.03.0496 BC 560 PNP	IC>100mA, B>100 any IC>100mA, B>100 any	S9 24U see S 7 optio T1 1.022.352.00 output trafo 1,6	
A 2 37:11:3104 100 KOmm 1% A 3 37:11:3203 20 KOmm 1% A 4 37:11:3203 20 KOmm 1% A 6 37:11:3203 20 KOmm 1% A 6 37:11:3203 20 KOmm 1% A 6 37:11:3203 20 KOmm 1% A 6 37:11:3203 20 KOmm 1% A 8 37:11:3103 11 KOmm 1% A 8 37:11:3103 11 KOmm 1% A 10 37:11:3103 11 KOmm 1% A 11 37:11:3203 20 KOmm 1% A 12 37:11:3103 10 KOmm 1% A 12 37:11:3104 10 KOmm 1% A 13 37:11:3203 20 KOmm 1% A 13 37:11:3203 20 KOmm 1% A 14 37:11:3203 20 KOmm 1% A 15 37:11:3203 20 KOmm 1% A 15 37:11:3203 20 KOmm 1% A 16 37:11:3203 20 KOmm 1% A 17 37:11:3203 20 KOmm 1% A 18 37:11:3203 20 KOmm 1% A 19 37:11:3203 10 KOmm 1% A 19 37:11:3203 10 KOmm 1% A 20 37:11:3203 10 KOmm 1% A 21 37:11:3203 10 KOmm 1% A 22 37:11:3203 10 KOmm 1% A 21 37:11:3203 10 KOmm 1% A 22 37:11:3203 10 KOmm 1% A 22 37:11:3203 10 KOmm 1% A 22 37:11:3203 10 KOmm 1% A 22 37:11:3203 10 KOmm 1% A 22 37:11:3203 10 KOmm 1% A 22 37:11:3203 10 KOmm 1% A 22 37:11:3203 10 KOmm 1% A 22 37:11:3203 10 KOmm 1% A 22 37:11:3203 10 KOmm 1% A 22 37:11:3203 00 KOmm 1% A 22 37:11:3203 00 KOmm 1% A 22 37:11:3203 00 KOmm 1% A 22 37:11:3203 00 KOmm 1% A 22 37:11:3203 00 KOmm 1% A 22 37:11:3203 00 KOmm 1% A 22 37:11:3203 00 KOmm 1% A 22 37:11:3203 00 KOmm 1% A 22 37:11:3203 00 KOmm 1% A 22 37:11:3203 00 KOmm 1% A 22 37:11:3203 00 KOmm 1% A 23 37:11:3203 00 KOmm 1% A 24 37:11:3203 00 KOmm 1% A 25 37:11:3203 00 KOmm 1% A 26 37:11:3203 00 KOmm 1%	0.25W MF	(10) C38 59.06.5102 1 nF 10% PE (10) C39 59.34.2470 47 pF 5% CE (10) C49 59.25.9109 1 u -20% SAL (10) C40 59.25.9109 1 u -20% SAL (10) C44 59.06.5104 100 nF 20% PE (10) C43 59.06.5104 100 nF 20% PE (10) C44 59.06.5104 100 nF 20% PE (10) C45 59.06.5104 100 nF 20% PE (10) C5 50.06.1108 2 5.60% 400mH (10) D5 50.06.125 1N.4488 (10) D7 50.07.0125 1N.4448 (10) D7 50.07.0105 CP4006 18 DIX SMFFT-RE (10) C4 50.07.1006 CP4006 18 DIX SMFFT-RE (10) C5 50.07.1006 CP4006 18 DIX SMFFT-RE (10) C5 50.07.1006 CP4006 18 DIX SMFFT-RE (10) C4 50.07.1006 CP4006 18 DIX SMFFT-RE (10) C5 50.07.1006 CP4006 18 DIX SMFF	any any any order GISTER FC.WOL GISTER FC.WOL B>100 any any
R****30 57*11*35.3 51 kDhm 1% R****31 not used 1% R****32 not used 1%	: 0.25% MF : 0.25% MF : 0.25% MF	PE=Polyester, PP=Polypropylen, PS=Polystyrol, SAL=Solid alumi lacquard	
R34 not used 1% R35 not used 1% R35 not used 1% R36 not used 1% R39 not used 1% R39 not used 1% R39 R39 R40 57.11.4214 7270 feet 1% R40	0.25W MF 0.25W MF 0.25W MF 0.25W MF 0.25W MF 0.25W MF	MANUFACTURER: Su=Burndy, Ex=Exar, Fc=Faircnild, GI=General In H=HeHeulett Packard, ITI=Intermetal), Mot=Motoro NS=National Semiconductors, Ph=Philips, Ra=Rayt SigaSignetics, Six=Siliconix, St=Studer, TI=Texas Instrument, CK=CUK	la,
R42 57.11.3123 12 kDhm 1% R43 57.11.3113 11 kDhm 2% R44 57.11.41C1 100 Ohm 5% R45 57.99.0135 1 kDhm R46 57.11.48C1 808 Dhm 5% R47 57.11.48C1 808 Dhm 5%	0.25W MF 0.25W MF 0.25W MP 1.25W MP 1.25W MP 0.25W MP 0.25W MP		
R49 58-01-8103 10 KOhm 10% R50 57-11-4821 820 Ohm 5% R51 57-11-4562 5.6 KOhm 5%	0 • 25 W MF		

Compressor/Limiter/Noise gate

COI	NTENTS	page
1.	General	1
2.	Operating elements	
3.	Noise gate: Release time diagram	3
4.	Compressor / Limiter: Threshold range diagram	3
5.	Compressor / Limiter: Attack and release time diagram	4
6.	Block diagram	5
7.	Technical data	5
8.	Circuit diagrams	7

1. General:



The Compressor/Limiter/Noise gate unit 1.913.155 can be installed in the instrument panel of the mixing console versions 900, 963 and 970. The unit can be routed to any input or output channel by using the insert points (insert patch panel).

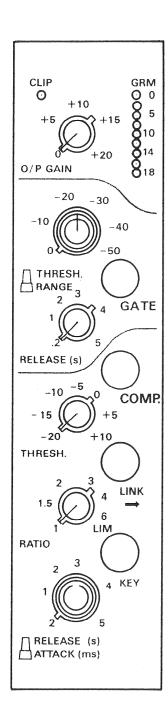
The main applications of this unit are twofold:

- The Limiter/Compressor part allows a compression of the dynamic range including the limitation of the maximum output level by an adjustable limiter threshold. Attack and decay times are adjustable; the decay characteristic is additionally determined by the program structures to avoid unwanted pumping effects.
- The noise gate reduces the basic noise of connected sources in program intermissions by reducing the gain of the channel if a preset value is undershot. Further applications can be found in drum and bass recordings where a noise gate can be used to produce a dry sound with high presence character.

The use of STUDER VCA's enables a high S/N ratio with minimal distortion.

EDITION: 31. Januar 1990

2. Operating elements



General:

CLIP: Overload LED

LED threshold: 2 dB below limiter threshold.

GRM: Gain reduction meter, shows gain reduction of compressor/noise gate path in dB.

GAIN: Potentiometer for increasing the output level up to 20 dB.

Noise gate:

GATE: Key to activate the noise gate.

THRESH: Noise gate threshold, adjustable in the range of 0 to - 50 dB.

RANGE: Noise gate gain reduction, adjustable in the range of 0 to - 50dB.

RELEASE: Time between the undershoting of the noise gate threshold and the start of the noise gate action. Adjustable range: 0.2 to 5 seconds. (see fig. 1)

Compressor / Limiter:

COMPR.: Key to activate the compressor.

LINK: Control voltage coupling with the adjacent compressor/ limiter/noise gate unit on the right hand side. The higher voltage of either one takes control over both.

KEY: Key to activate the AC input voltage at the auxiliary input KEY to control the VCA gain. Applications: De-essing, voice-over, delayed gate. (see fig. 4)

THRESH: Compressor threshold, adjustable range - 20 to + 10 dB. (see fig. 2)

RATIO: Compression ratio, adjustable range 1:1 (no compression effect) to 20:1 (limiter effect).

ATTACK: Compressor attack time. Adjustable range 0.2 to 5 ms. (see fig. 3)

RELEASE: Compressor decay time. The scale refers to a static 6 dB gain reduction and LIM setting of ratio. The actual decay time is program dependent and optimized, thus differences to the pot position may occur. (see fig. 3)

3. Noise Gate: Release time diagram

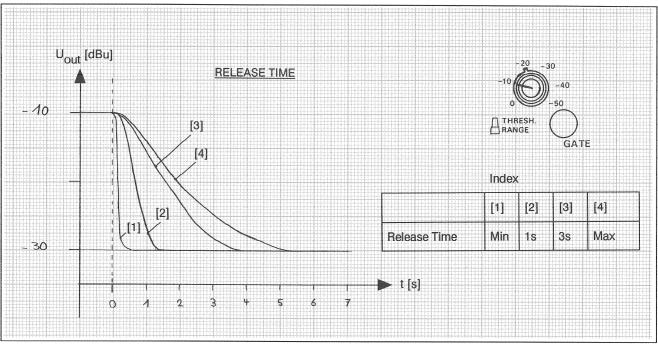


Fig. 1: Four different release time characteristics at a threshold of -10dBu and a noise gate gain reduction range of -20dBu.

4. Compressor / Limiter: Threshold range diagram

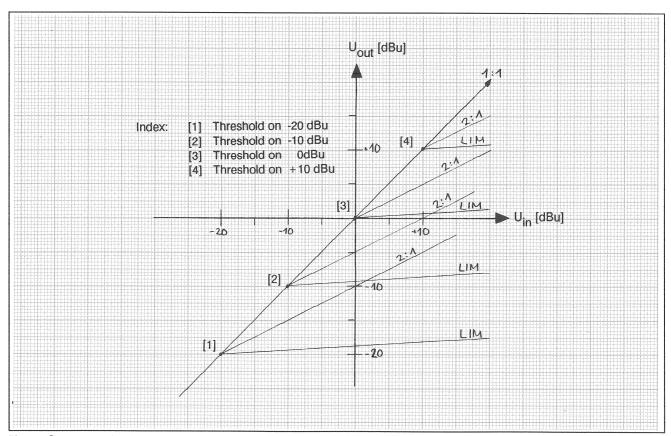


Fig. 2: Compressor threshold at four different input voltage levels (U_{in}).

5. Compressor / Limiter: Attack and release time

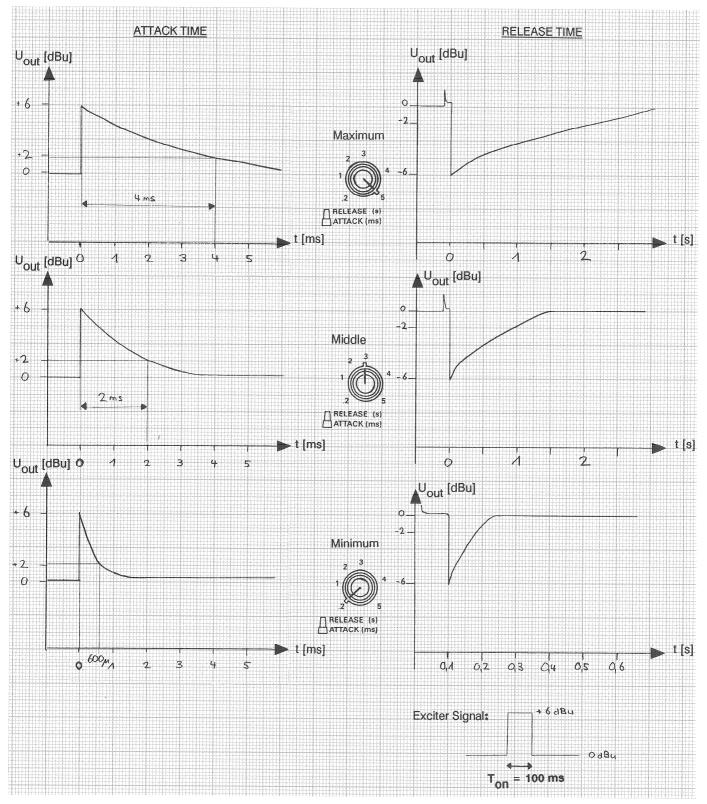


Fig. 3: The compressor/limiter - characteristics at three different values of the attack- and release time.

6. Block diagram

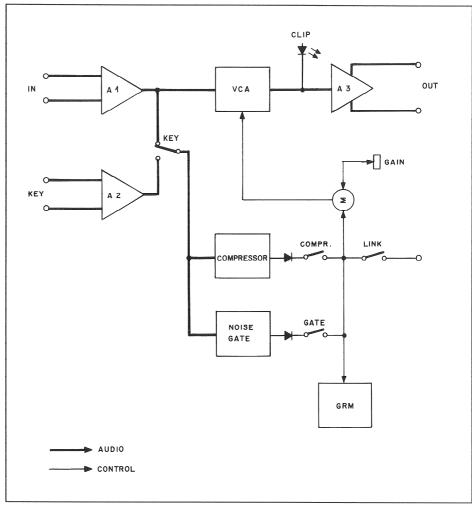


Fig. 4

7. Technical data:

Current consumption: ± 15 V: typ. 86 mA, max. 130 mA

- 6 V: typ. 10 mA, max. 20 mA

Frequency response: ≤ 0.3 dB 30 to 15.000 Hz

Noise level: ≤-95 dBu with gain 0 dB and noise gate off.

≤-100 dBu with gain 0 dB and noise gate on.

Distortion: ≤- 60 dB with input + 16 dBu, output 0 dBu, threshold 0 dB, compressor on,

Ratio LIM, max release time, in the range of 30 to 15.000 Hz.

Adjustments: No service adjustments required.

EDITION: 31. Januar 1990

Kompressor / Limiter / Noise gate

INH	IALT	Seite
1.	Allgemeines	1
2.	Bedienungselemente	2
3.	Noise-gate: Ansprechzeit Charakteristik	3
4.	Kompressor/Limiter: Schwellenwert Diagramm	3
5.	Kompressor/Limiter: Ansprech- und Rücklaufzeit	4
6.	Blockschaltbild	5
7.	Technische Daten	5
8	Schemateil	7

1. Allgemeines



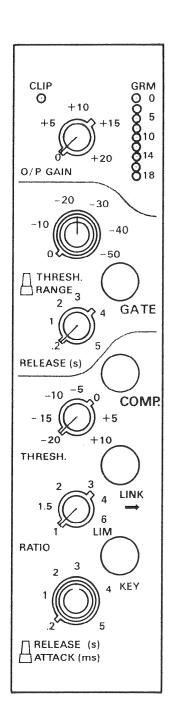
Die Kompressor / Limiter / Noise-gate Baugruppe Nr. 1.913.155 kann ins Instrumentenpanel der Mischpulte STUDER 900, 963 und 970 eingebaut werden. Unter Benützung der Einschleifpunkte (Insert patch panel) kann die Einheit auf jeden gewünschten Ein- oder Ausgangskanal geschaltet werden.

Die Baugruppe dient folgenden Hauptanwendungen:

- Der Begrenzer / Kompressor Teil erlaubt eine Kompression des Dynamikbereichs in wählbarem Ausmass. Der verstellbare Schwellenwert (threshold) ermöglicht die Begrenzung des maximalen Ausgangspegels. Die Ansprech- und Rücklaufzeiten sind frei wählbar. Um unerwünschte Pumpeffekte zu verhindern, wird die Rücklaufzeit zusätzlich von der Programmstruktur beeinflusst.
- Das Noise-gate vermindert das Grundgeräusch zugeschalteter Quellen bei Programmunterbrüchen. Die Verstärkung des betreffenden Kanals wird reduziert, sobald ein vorgewählter Signalpegel unterschritten wird. Weitere Anwendungen bieten sich bei Schlagzeug- und Bass Aufnahmen um einen trockenen Klang mit hoher Präsenz zu erzielen.

Aus der Verwendung von STUDER VCA's resultieren der hohe Geräuschspannungsabstand und die minimalen Verzerrungen.

2. Bedienungselemente



Allgemein:

CLIP: Übersteuerungs - Leuchtdiode LED Schwellenwert: 2dB unterhalb der Begrenzerschwelle.

GRM: (Gain reduction meter) Anzeigeinstrument für die Verstärkungsreduktion des Kompressor / Noise-gate Signalweges. (in dB)

GAIN: Potentiometer zur Anpassung des Ausgangspegels bis 20 dB.

Noise-gate:

GATE.: Diese Drucktaste schaltet die Noise-gate Funktion ein bzw. aus.

THRESH.: Noise-gate Einsatzschwelle, einstellbar im Bereich von 0 bis -50dB.

RANGE: Verstärkungsreduktion des Noise-gate, einstellbar im Bereich von 0 bis -50 dB

RELEASE: Intervall vom Zeitpunkt des Unterschreitens der Noise-gate Einsatzschwelle bis zum Erreichen der vollen Noise-gate Funktion. Es ist zwischen 0,2 und 5 Sekunden einstellbar. (vgl. Fig. 1)

Kompressor / Begrenzer:

COMPR.: Drucktaste zur Aktivierung der Kompressor / Begrenzer Funktion.

LINK: Koppelung der Kompressor/Begrenzer/Noise-gate Funktionen mit der rechts benachbarten Einheit. Dabei kontrolliert die jeweils höhere Steuerspannung beide Einheiten.

KEY: Diese Umschalttaste verwendet die Spannung des Hilfseingangs KEY für die Steuerung der VCA Verstärkung. Anwendungen: 'De-essing' (Hochtonbegrenzung), 'Voice-over' (Pegelregelung von Hintergrundmusik durch Sprechersignal), Gate mit Verzögerung.

THRESH.: Einsatzschwelle des Begrenzers einstellbar von -20 bis +10 dB. (vgl. Fig. 2)

RATIO: Das Kompressionsverhältnis [U_{in}/U_{out}] ist einstellbar von 1:1 (keine Kompressionswirkung) bis 20:1 (Begrenzerwirkung).

ATTACK: Kompressor Ansprechzeit. Einstellbereich von 0,2 bis 5 Sekunden. (vgl. Fig. 3)

RELEASE: Kompressor Rücklaufzeit. Die Skala bezieht sich auf eine konstante Verstärkungsreduktion von 6dB bei Limitereinstellung des Ratioreglers. Die wirkliche Rücklaufzeit ist programmabhängig und optimiert. Es können demzufolge Unterschiede zur Reglerposition auftreten. (vgl. Fig. 3)

3. Noise-gate: Ansprechzeit Charakteristik

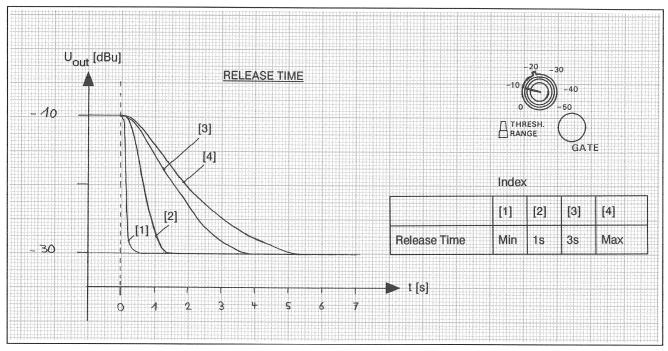


Fig. 1: Vier unterschiedliche Einstellungen der Ansprechzeit bei einem Schwellenwert von -10dBu und einer Verstärkungsreduktion (Range) von -20dBu.

4. Kompressor / Limiter: Schwellenwert Diagramm

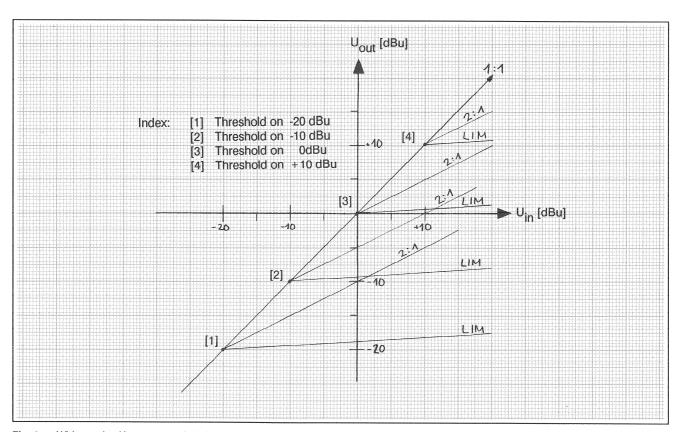


Fig. 2: Wirkung des Kompressors bei vier verschiedenen Schwellenwerten. Das Kompressionsverhältnis (Ratio) ist jeweils schwach (2:1) und maximal (Limiter) gewählt.

5. Kompressor Limiter: Ansprech- und Rücklaufzeit

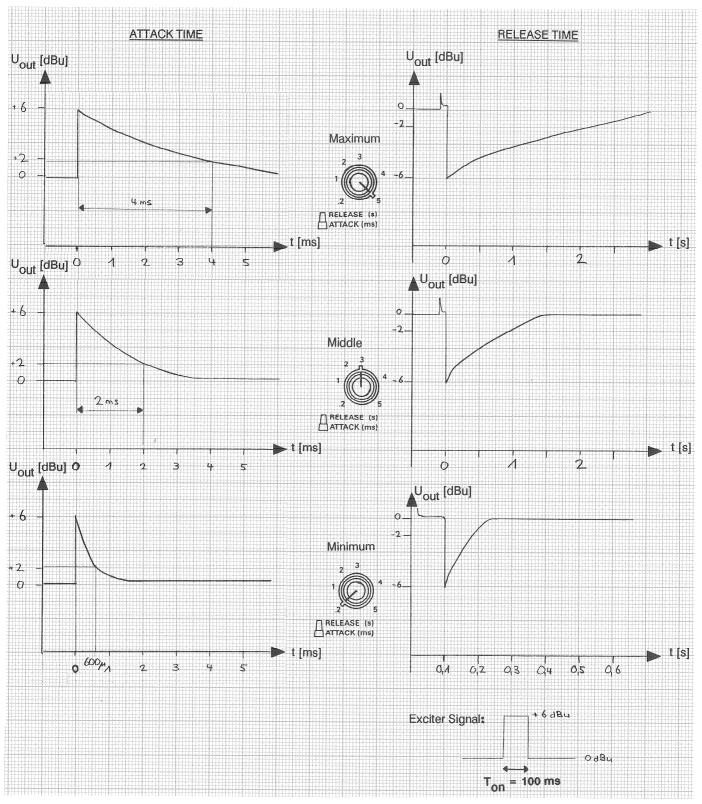


Fig. 3: Charakterisik des Kompressor / Begrenzers bei drei unterschiedlichen Werten der Ansprech- und Rücklaufzeit.

6. Blockdiagramm

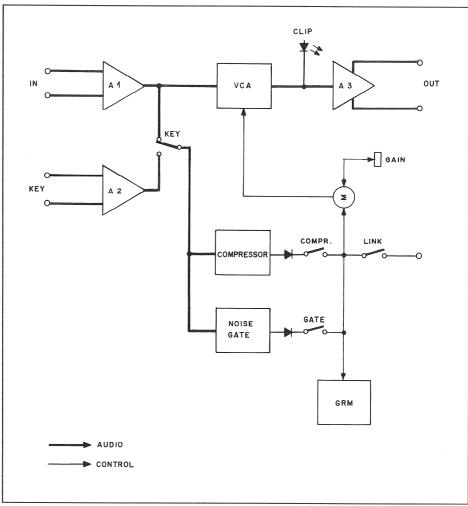


Fig. 4

7. Technische Daten

Stromaufnahme: ± 15 V: typ. 86mA, max. 130mA,

- 6 V typ. 10mA, max. 20mA,

Frequenzgang: ≤ 0,3dB 30 bis 15'000Hz

Rauschpegel: ≤ -95dBu bei Verstärkung 0dB und Noise-gate ausgeschaltet

≤-100dBu bei Verstärkung 0dB und Noise-gate eingeschaltet

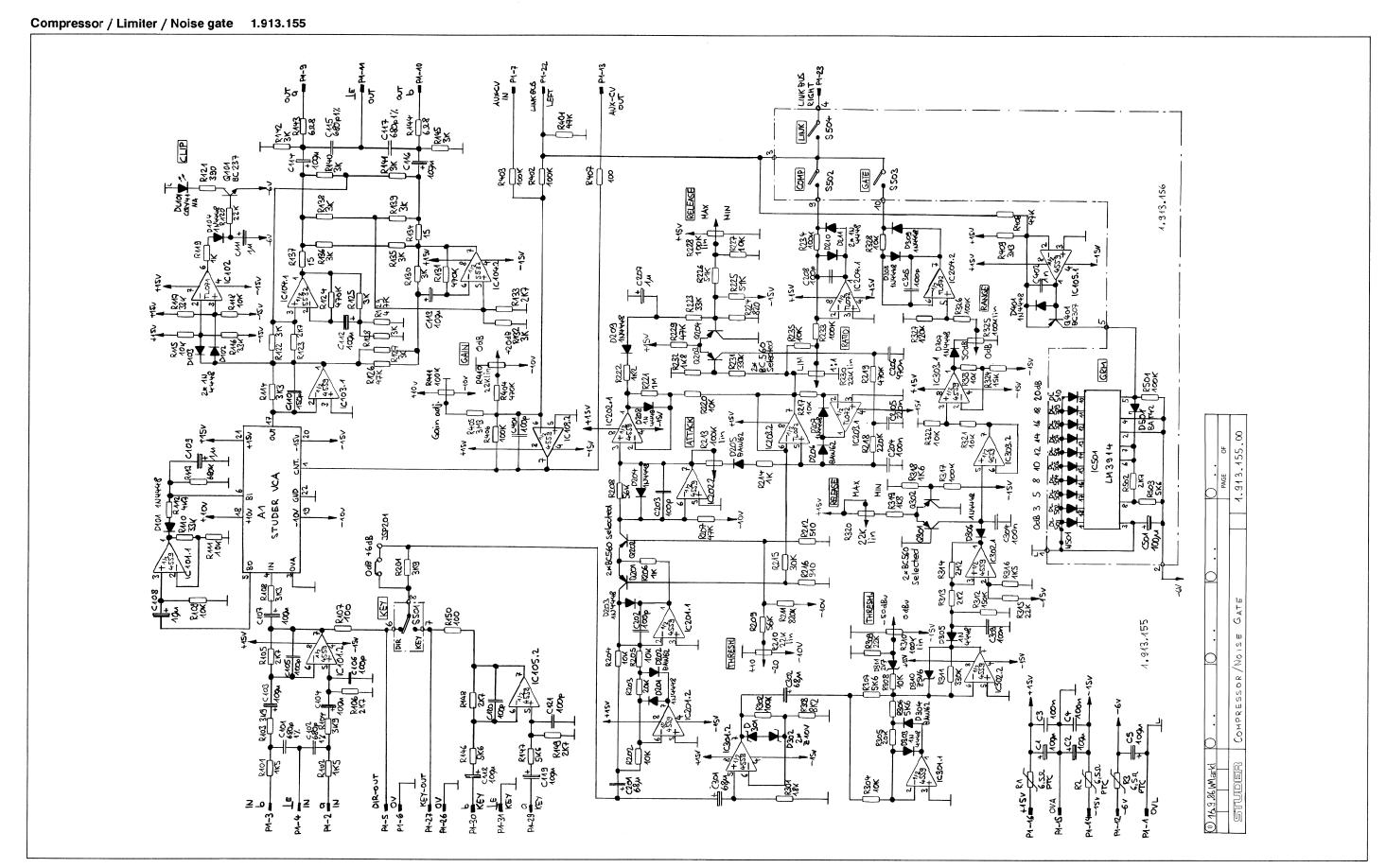
Verzerrungen: ≤-60dB im Bereich von 30 bis 15'000Hz unter den Bedingungen:

Eingang +16dBu; Ausgang 0dBu; Threshold 0dB; Kompressor ein; Ratio LIM;

Release maximal;

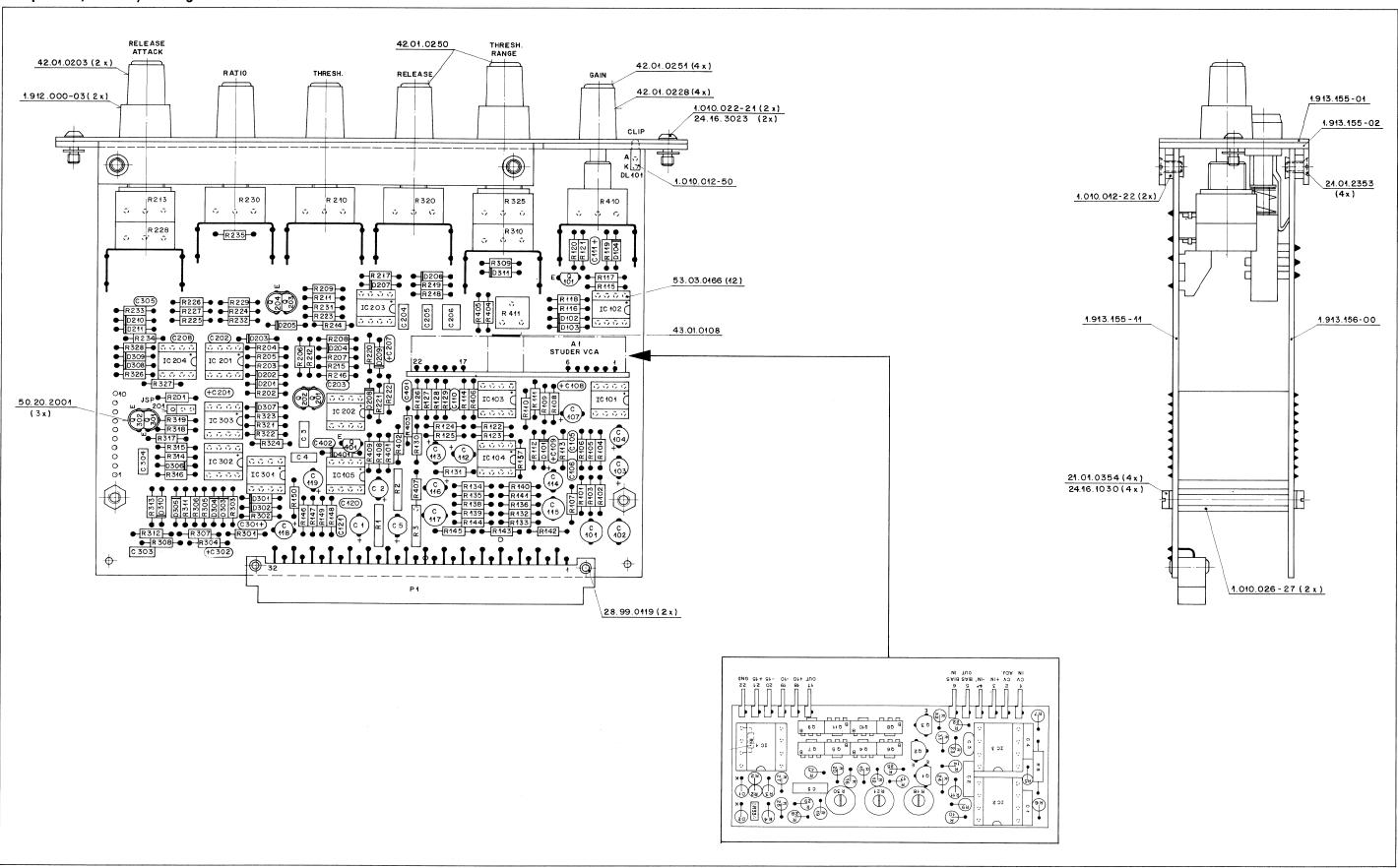
Abgleich: Nicht erforderlich.

8. Circuit diagrams / Schemateil



COMPRESSOR / LIMITER / NOISE GATE

Compressor / Limiter / Noise gate 1.913.155



STUDER AUDIO CONSOLE 1.913.155

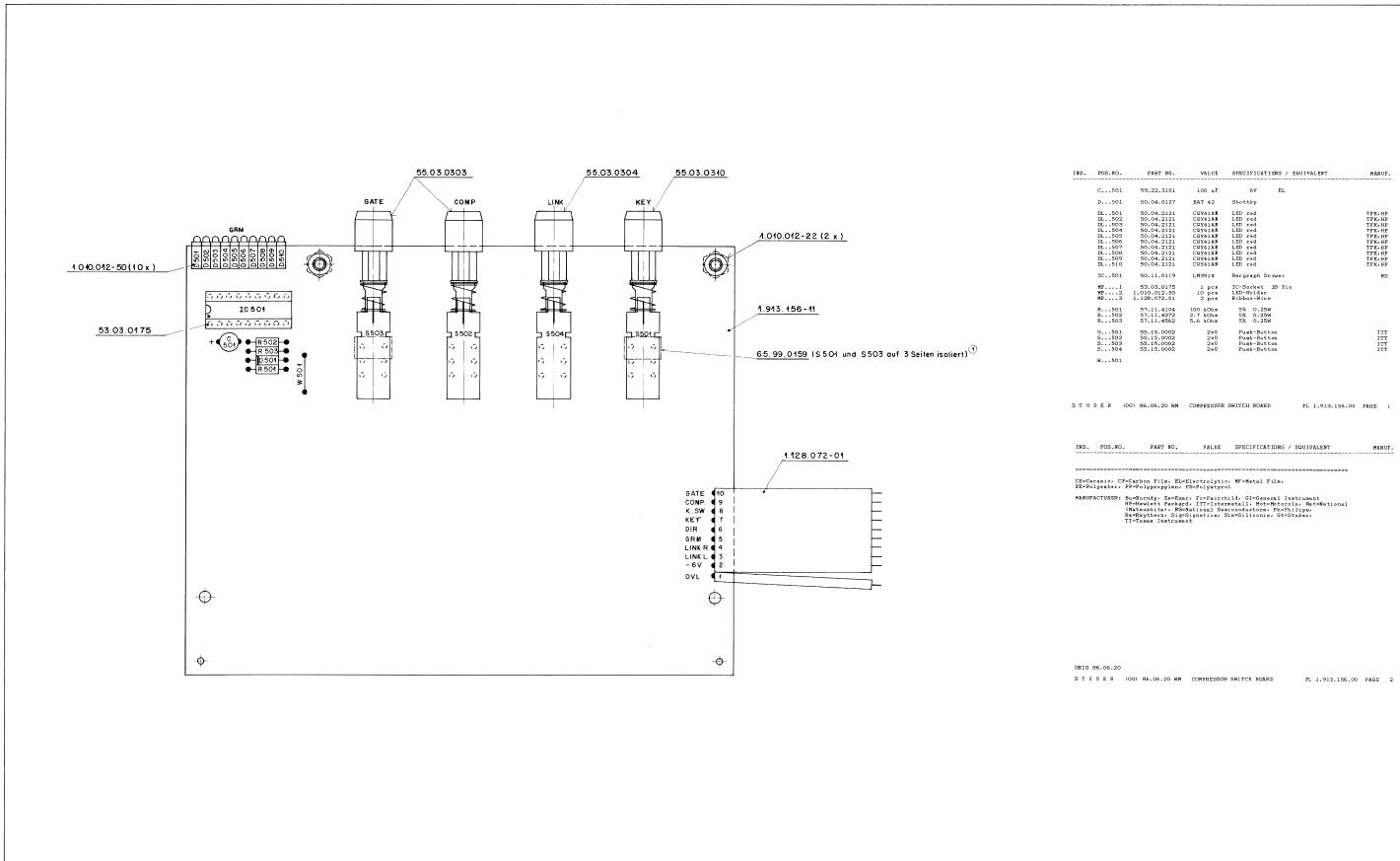
COMPRESSOR / LIMITER / NOISE GATE

Compressor / Limiter / Noise gate 1.913.155

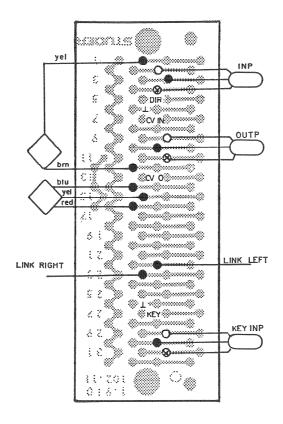
POS.NO. PART NO. VALUE SPECIFICATIONS / EQUIVALENT MANUF.	IND. POS.MO. PART NO. VALUE SPECIFICATIONS / EQUIVALENT MANUF.	IND. POS.NO. PART NO. VALUE SPECIFICATIONS / EQUIVALENT MANUF.
A1 1.010.110.50	R102 57.11.3152 1.5 kOhm 1X 0.25k R103 57.11.3352 3.9 kOhm 1X 0.25h R104 57.11.3322 3.9 kOhm 1X 0.25h R105 57.11.3272 2.7 kOhm 1X 0.25h R106 57.11.3272 2.7 kOhm 1X 0.25h R107 57.11.410.100 Ohm 5X 0.25h R108 57.11.4332 3.3 kOhm 5X 0.25h R109 57.11.4332 3.3 kOhm 5X 0.25h R109 57.11.4103 10 kOhm 5X 0.25h R110 57.11.4103 10 kOhm 5X 0.25h R111 57.11.4372 4.7 kOhm 5X 0.25h R111 57.11.4472 4.7 kOhm 5X 0.25h R112 57.11.4472 4.7 kOhm 5X 0.25h	R328 57.11.4103 10 kOhm 5% 0.2584 R401 57.11.4473 47 kOhm 2% 0.2584 R402 57.11.4473 47 kOhm 2% 0.2584 R403 57.11.4474 10 kOhm 2% 0.2584 R403 57.11.335 3.3 MOhm 5% 0.2584 R404 57.11.335 3.3 MOhm 5% 0.2584 R405 57.11.335 3.3 MOhm 5% 0.2584 R406 57.11.4104 100 kOhm 2% 0.2584 R406 57.11.4104 100 kOhm 2% 0.2584 R408 57.11.4101 100 Chm 5% 0.2584 R409 57.11.335 3.3 MOhm 5% 0.2584 R409 57.11.335 3.3 MOhm 5% 0.2584 R409 57.11.335 3.3 MOhm 5% 0.2584 R409 57.11.535 3.3 MOhm 5% 0.2584 R409 57.11.535 3.3 MOhm 5% 0.2584 R401 1.010.014.58 22 kOhm 10% lin variable resistor St R410 1.010.014.58 22 kOhm 10% lin variable resistor PMG
C 104	R 114 57.11.4332 3.3 KOhm 5% 0.25% R 115 57.11.4103 10 KOhm 5% 0.25% R 116 57.11.4333 33 KOhm 5% 0.25% R 117 57.11.4333 33 KOhm 5% 0.25% R 118 57.11.4333 30 KOhm 5% 0.25% R 119 57.11.4102 1 KOhm 5% 0.25% R 119 57.11.4102 1 KOhm 5% 0.25% R 120 57.11.4391 390 Ohm 5% 0.25% R 121 57.11.4391 390 Ohm 5% 0.25% R 121 57.11.4391 390 Ohm 5% 0.25% R 122 57.11.3302 3 KOhm 1% 0.25% R 124 57.11.4474 47 KOhm 5% 0.25% R 125 57.11.4474 47 KOhm 2% 0.25% R 125 57.11.4474 47 KOhm 2% 0.25% R 125 57.11.3402 3 KOhm 2% 0.25% R 126 57.11.4474 47 KOhm 2% 0.25%	(2) 89/01/13
C116 59,22,3101 100 uF -20X 10V EL C117 59,05.1661 680 pF 1x 500V FF C118 59,22,3101 100 uF -20X 10V EL C120 59,34.4101 100 uF -20X 10V EL C120 59,34.4101 100 pF CF C202 59,34.4101 100 pF CF C202 59,34.4101 100 pF CF C202 59,34.4101 100 pF CF C202 59,34.4101 100 pF CF C203 59,34.4101 100 pF CF C204 59,06.5104 100 nF 10X PF C205 59,06.5224 220 uF 10X PE	R 126 57.11.3473 47 kOhm 1% 0.25% R 127 57.11.3302 3 kOhm 1% 0.25% R 128 57.11.3302 3 kOhm 1% 0.25% R 129 57.11.3473 47 kOhm 1% 0.25% R 130 57.11.3473 47 kOhm 1% 0.25% R 130 57.11.3474 470 kOhm 2% 0.25% R 131 57.11.3472 470 kOhm 2% 0.25% R 132 57.11.3472 2.27 kOhm 1% 0.25% R 135 57.11.3302 3 kOhm 1% 0.25% R 135 57.11.3302 3 kOhm 1% 0.25% R 135 57.11.3302 3 kOhm 1% 0.25% R 136 57.11.3302 3 kOhm 1% 0.25% R 136 57.11.3302 3 kOhm 1% 0.25%	(3) 90/0/1/7 Al VCh i,911,290.00 replaced by 1,911,290.81 CD=Ceramic, CF=Carbon Film, EL=Electrolytic, MF=Metal Film, FD=Polyseter, PF=Polypropylen, PS=Polyseter) MANUFACTURER: Bu=Burndy, Ex=Exar, Fo=Pairchild, GI=General Instrumenta MP=Heelett Packard, ITT=Internetall, Met=Motorols, Nat= (Matsushita), NS=Mational Semiconductors, Ph=Philips, Ra=Raytheon, Sig=Signetics, Six=Siliconix, St=Studar, TI=Texas Instruments
C206 59.06.5474 470 nF 10% PE C207 59.26.9109 1 uF 16V SAL DER (03) 90/01/17 WY COMPRESSOR/NOISE GATE PL 1.913.155.00 FAGE 1	R137 57.11.3150 15 Ohm 1% 0.25W R138 57.11.3302 3 KOhm 1% 0.25W STUDER (03) 90/01/17 WY COMPRESSOR/NOISE GATE PL 1.913.155.00 PIGE 4	ORIG 87.02.26 (02) 89/01/13 (03) 90/01/17 S T U D E R (03) 90/01/17 WY COMPRESSOR/NOISE GATE FL 1.913.155.00 PAGE 7
POS.NO. PART NO. VALUE SPECIFICATIONS / EQUIVALENT MANUF. C208 59.34.4101 100 pF CE C301 59.26.0680 68 uF 6V SAL C302 59.26.0680 68 uF 6V SAL	IND. POS.NO. PART NO. VALUE SPECIFICATIONS / EQUIVALENT MANUF. R139 57.11.3302 3 KOhm 1k 0.25W R140 57.11.3302 3 KOhm 1k 0.25W R141 57.11.3302 3 KOhm 1k 0.25W	
C303 59.06.5104 100 nF 10% PE	R142 57.11.3302 S kOhm 1k 0.25W R143 57.11.3669 6.8 Ohm 1k 0.25W R144 57.11.3669 6.8 Ohm 1k 0.25W R145 57.11.3362 3 kOhm 1k 0.25W R146 57.11.3562 5.5 kOhm 1k 0.25W R147 57.11.3562 5.5 kOhm 1k 0.25W R148 57.11.3272 2.7 kOhm 1k 0.25W R148 57.11.3272 2.7 kOhm 1k 0.25W	
D104 50.04.0125 1N4448 any D202 50.04.0125 1N4448 any D202 50.04.0132 BAW 62 any D203 50.04.0125 1N4448 any D204 50.04.0125 1N4448 any D204 50.04.0125 1N4448 any D206 50.04.0125 BAW 62 any D206 50.04.0132 BAW 62 any D206 50.04.0132 BAW 62 any D207 50.04.0132 BAW 62 any	R201 57.11.4392 3.9 NOhn 2% 0.25W R202 57.11.3103 10 KOhn 1½ 0.25W R203 57.11.3203 20 KOhn 1½ 0.25W R204 57.11.3103 10 KOhn 1½ 0.25W R205 57.11.3103 10 KOhn 1½ 0.25W R205 57.11.4103 10 KOhn 1½ 0.25W R207 57.11.4373 47 KOhn 1½ 0.25W R207 57.11.4373 47 KOhn 1½ 0.25W R208 57.11.4573 56 KOhn 1½ 0.25W	
D208	R209 57.11.4563 55 KOhn 2% 0.25W R210 1.010.014.58 22 KOhn 10% lin. variable resistor St R211 57.11.4824 820 KOhn 2% 0.25W R212 57.11.3511 510 Ohn 11% 0.25W R213 1.010.023.30 100 KOhn 10% lin. variable resistor St R214 57.11.3513 30 KOhn 10% lin. variable resistor St R215 57.11.3911 910 Ohn 11% 0.25W R216 57.11.3911 910 Ohn 11% 0.25W R217 57.11.4103 10 KOhn 5% 0.25W	
D306 50.04.0125 1N4448 any D307 50.04.0125 1N4448 any D308 50.04.0125 1N4448 any D308 50.04.0125 1N4448 D310 50.04.105 1N4448 D310 50.04.1106 Z 5.6V 400mW BZKB3C5.6, BZX55C5.6, ZPD5.6 Sep.ITT D311 50.04.1106 Z 2.7V 400mW BZKB3C2.7, BZX55C2.7, ZPD2.7 Sep.ITT D401 50.04.0125 1N4448 DER (03) 90/01/17 WY COMPRESSOR/NOISE GATE PL 1.913.155.00 PAGE 2	R218 57.11.4224 220 KOhn 5% 0.25W R219 57.11.4103 10 KOhn 5% 0.25W R220 57.11.4103 10 KOhn 5% 0.25W R221 57.11.4103 10 KOhn 5% 0.25W R222 57.11.4122 1.2 KOhn 5% 0.25W R222 57.11.4122 1.2 KOhn 5% 0.25W R223 57.11.4323 33 KOhn 5% 0.25W R224 57.11.4821 820 Ohn 2% 0.25W R224 57.11.4821 820 Ohn 2% 0.25W R225 57.11.4321 51 KOhn 5% 0.25W R225 57.11.3513 51 KOhn 2% 0.25W STUDER (03) 90/01/17 WY COMPRESSOR/NOISE GATE PL 1.913.155.00 PAGE 5	
FOS.NO. PART NO. VALUE SPECIFICATIONS / EQUIVALENT MANUF.	IN). POS.ND. PART NO. VALUE SPECIFICATIONS / EQUIVALENT HANUF.	
DL.:101 50.04.2121 CQY41NN LED red TFK.HP IC.:101 50.09.0107 RC4559 dual op. amp. Ra.NEC IC.:102 50.09.0103 TL071 single op. amp Bi-FET NS.TI IC.:103 50.09.0107 RC4559 dual op. amp. Ra.NEC IC.:104 50.09.0105 ND5532 dual op. amp. Sig.Ex.Ra	R226 57.11.3513 51 kOhm 22 0.25W R227 57.11.4103 10 kOhm 5% 0.25W R229 100 kOhm 10% 1in. part of R 213 R229 57.11.4473 47 kOhm 22 0.25W R230 1.010.014.58 22 kOhm 10% 1in variable resistor 5t R231 57.11.43473 330 kOhm 22 0.25W	
CC105 S0.09.0107 RC4559 dual op. amp. Ravec CC201 S0.09.0107 RC4559 dual op. amp. Ravec CC202 S0.09.0107 RC4559 dual op. amp. Ravec CC203 S0.09.0101 TL072 dual op. amp. J-FET NS.TI CC204 S0.09.0101 TL072 dual op. amp. J-FET NS.TI NS.TI CC205 S0.09.0107 RC4559 dual op. amp. Ravec CC205 S0.09.0107 RC4559 dual op. amp. Ravec CC205 S0.09.0107 RC4559 dual op. amp. Ravec Ravec CC205 S0.09.0107 RC4559 dual op. amp. Ravec CC206 Ravec	R 232 57,11,4192 1.8 kOhn 2% 0.25% R 233 57,11,4194 100 kOhn 2% 0.25% R 234 57,11,4104 100 kOhn 5% 0.25% R 235 57,11,4104 100 kOhn 5% 0.25% R 301 57,11,4193 18 kOhn 5% 0.25% R 301 57,11,4193 18 kOhn 5% 0.25% R 302 57,11,422 8.2 kOhn 5% 0.25% R 303 57,11,4824 8.2 kOhn 5% 0.25% R 304 57,11,1482 10 kOhn 1% 0.25%	
JSP1 54.01.0020 3 Pin Jumper plug MP1 53.03.0166 12 pcs IC-Socket 8 pin MP2 54.01.0021 1 pcs Jumper MP3 50.02.0201 3 pcs clip 24 TO 92 MP4 1.010.012.50 1 pcs LED-Holder F1 54.01.0359 2416 Pin DIN Euroconnector Bu	R305 57.11.3203 20 KDhm 1% 0.25% R306 57.11.3562 5.6 KDhm 1% 0.25% R307 57.11.3562 5.6 KDhm 1% 0.25% R308 57.11.4103 10 KDhm 1% 0.25% R310 1.010.023.88 100 KDhm 10% 1.23 0.25% R310 1.010.023.88 100 KDhm 10% 1.23 0.25% R311 57.11.4313 300 KDhm 5% 0.25% R312 57.11.4154 150 KDhm 5% 0.25% R312 57.11.4154 150 KDhm 5% 0.25% R313 57.11.4262 2.2 KDhm 5% 0.25%	
Q.	R314 57.11.5225 2.2 MOhm 5% 0.25W R315 57.11.4203 22 KOhm 2% 0.25W R316 57.11.4152 1.5 KOhm 2% 0.25W R317 57.11.4162 1.5 KOhm 2% 0.25W R319 57.11.4104 100 KOhm 5% 0.25W R319 57.11.4101 100 KOhm 5% 0.25W R319 57.11.4103 1.5 KOhm 5% 0.25W R321 57.11.4103 10 KOhm 5% 0.25W R321 57.11.4103 10 KOhm 2% 0.25W R321 57.11.4103 10 KOhm 2% 0.25W	
R1 57.92.1271 6.5 Ohn I= 270nA PTC Philips Nr.2322 662 12711 R2 57.92.1271 6.5 Ohn I= 270nA PTC Philips Nr.2322 662 12711 R3 57.92.1271 6.5 Ohn I= 270nA PTC Philips Nr.2322 662 12711 R01 57.11.3152 1.5 kOhn 1% 0.25N	R323 57.11.4103 10 kOhn 2% 0.25W R324 57.11.4153 15 KOhn 2% 0.25W R325 100 KOhn 10% 1in. part of R 310 R326 57.11.4104 100 KOhn 2% 0.25W	

COMPRESSOR / LIMITER / NOISE GATE

Compressor Switch Board 1.913.156



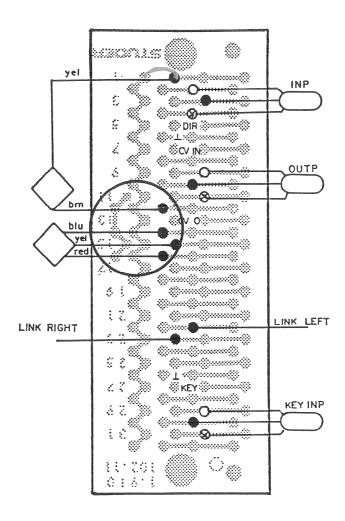
LIM./COMPR./NOISE G. 1.913.155

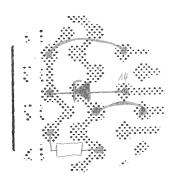


Р

0	9 0	\bigcirc \bigcirc)		0	 		\bigcirc		
					audinaudh un bhaile an chann an chann an chann an chann an chann an chann an chann an chann an chann an chann a	,		PAGE	OF	_
S	TUDE	LIM./COMPR./NOISE GA	ATE	1.913.155			W/10-10-10-00-00-00-00-00-00-00-00-00-00-0			

LIM./COMPR./NOISE G. 1.913.155

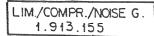




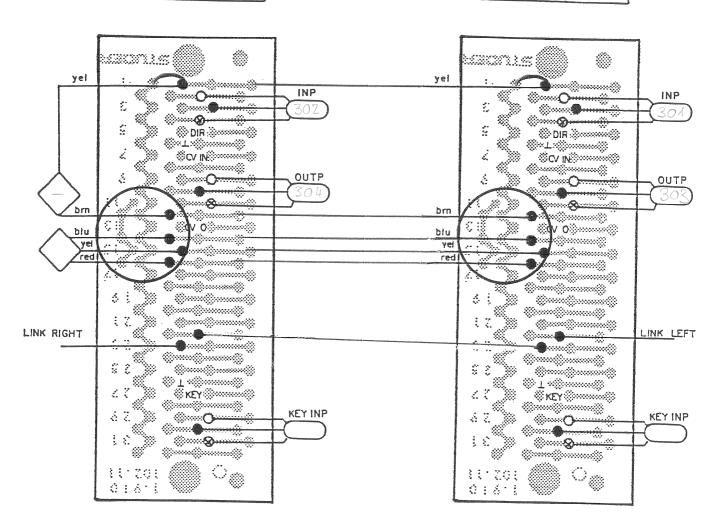
$$R = 1k2 \Omega$$

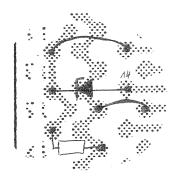
$$2D = 9VA 1,3W$$

008.02.99 Za			0
	Print 1.510.102.11		PAGE OF
STUDER	Limiter Compressor		



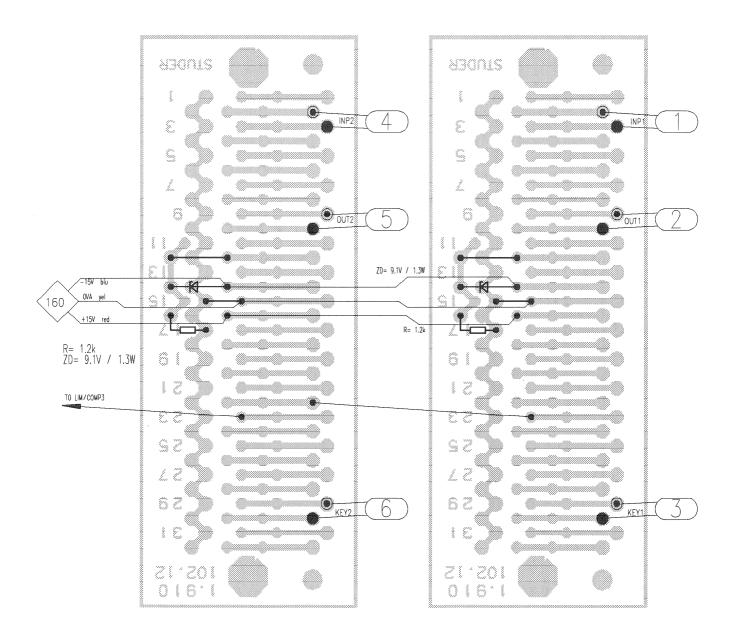
LIM./COMPR./NOISE G. 1.913.155





 $R = 1k2 \Omega$ ZD = 9VA 1,3W

(1)		O
	Print 1.510.102.11	PAGE OF
STUDER	Limiter Compresson	



P:\ACAD\Busboards\BOARDS\910\91010212lc_w.dwg

0 07.06.00/GY	0 0	0
91010212lc_w	MUSTER	Page 1 of 1
REGENSDORF SWITZERLAND	LIMITER / COMPRESSOR	MUSTER

1.913.160/164.00

SAMMELSCHIENEN ANWAHL 9...16 SAMMELSCHIENEN ANWAHL 9...24

Die Sammelschienenanwahl-Einheit enthält Tasten, um das Eingangssignal auf 9...16 oder 9...24 aufzuschalten. Drei Mono Hilfsausgänge (Aux 5..7) und ein Stereo Hilfsausgang (Aux 8) sind ebenfalls eingebaut.

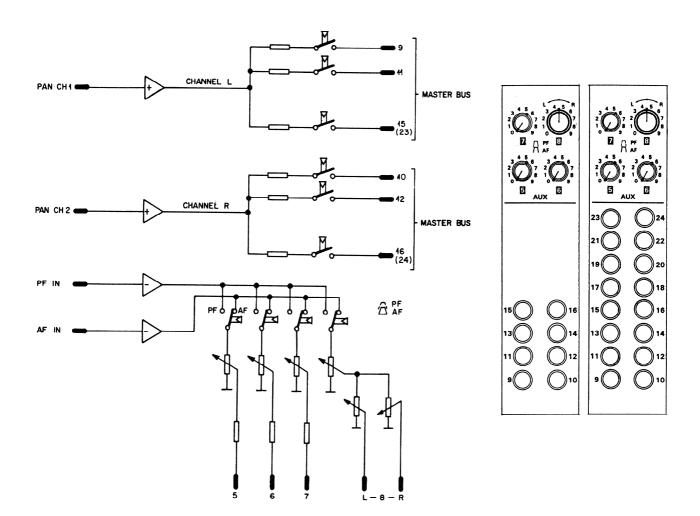
BUS SELECTOR 9...16 CH BUS SELECTOR 9...24 CH

The bus selector-unit comprises buttons to switch the input signal to 9...16 or 9...24 master buses.

Three mono (Aux 5...7) and 1 stereo-aux-outputs (Aux 8) are also built-in.

BLOCKSCHALTBILD

BLOCK DIAGRAM



TECHNISCHE DATEN

Speisespannungen

MECHANISCHE DATEN

Frontplatte dunkelgrau gespritzt Abmessungen Frontplatte Tiefe Gewicht

SPECIFICATIONS

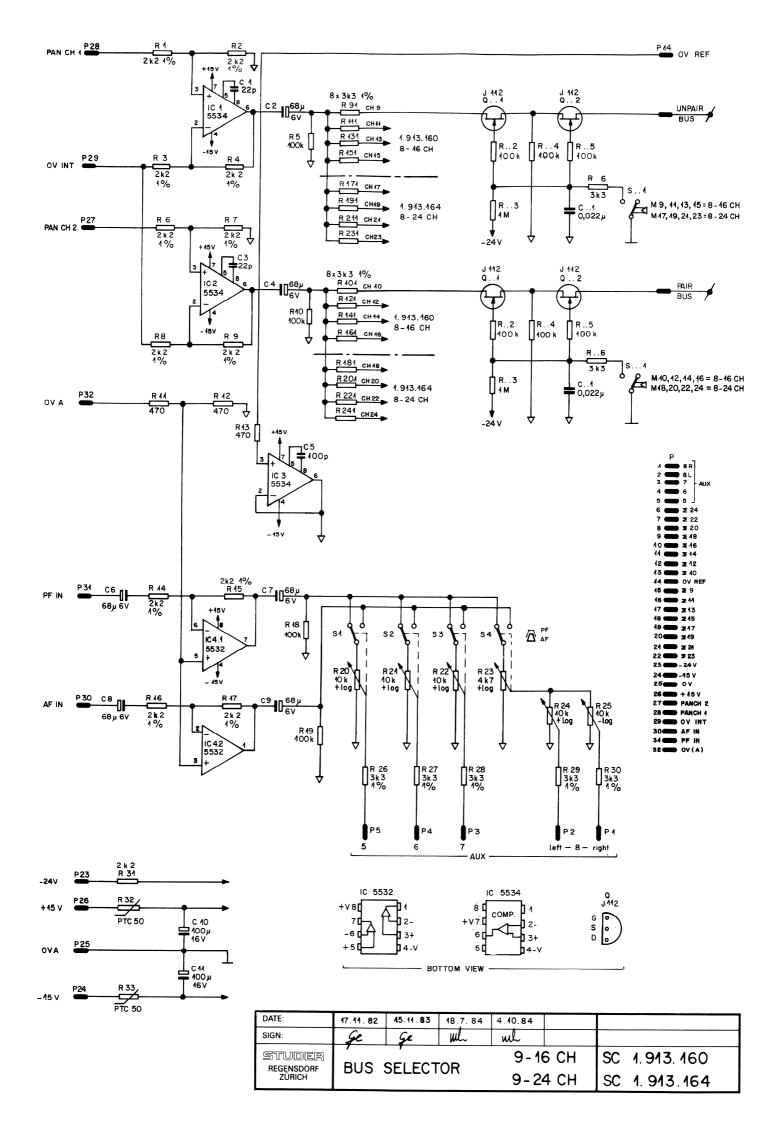
Supply +15 V 30mA

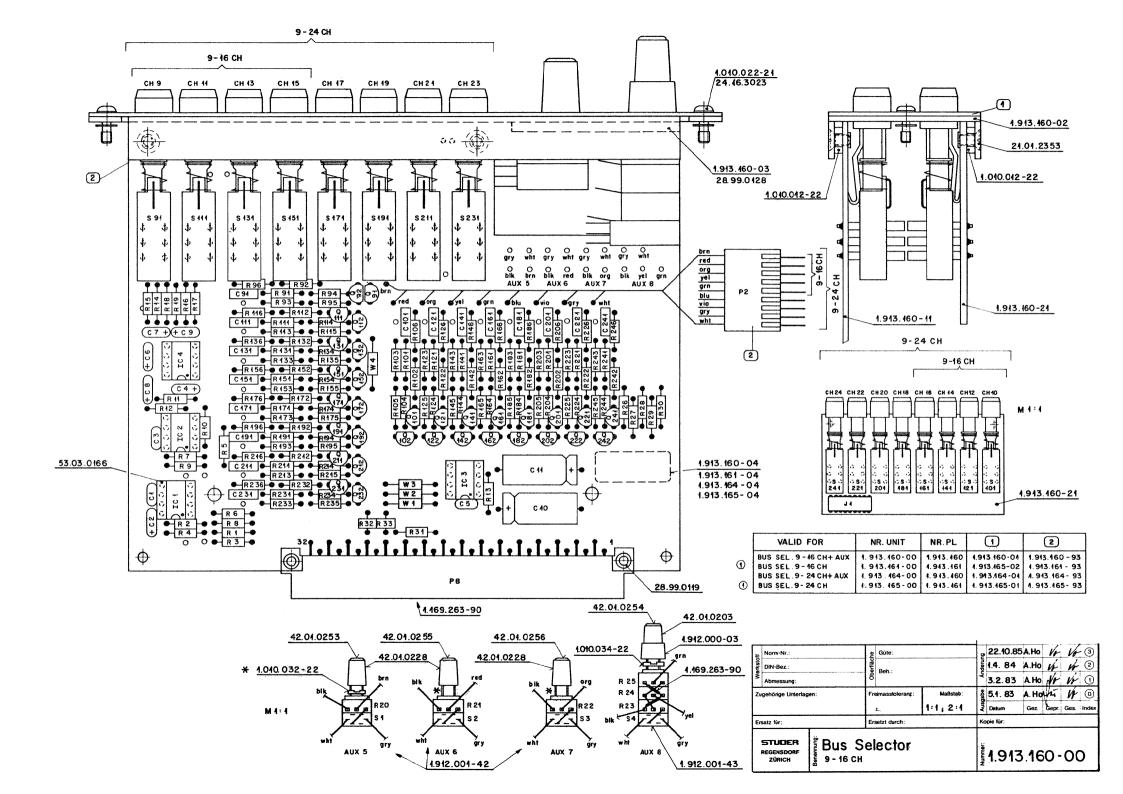
DIMENSIONS

Front panel laquered charcoal grey
Dimensions of front panel

 $\begin{array}{cccc} \text{Depth} & & 135 \text{ mm} \\ \text{Weight} & & 300 \text{ gr} \end{array}$

170×40 mm





IND	POS NO	PART NO	VALUE		SPECIFICATIONS/EQUIVALENT	MFR
	C 1	59.34.2220	22 pF			CER
	C 2	58.26.0680	68 p. F	60		SAL
	C 3	58.34.2720	22 pF			CER
	C 4	59.26.0680	68 pF	61		SAL
2	C 5	59.34,4101	100pF			CER
	C 6	59 . 76 . 0680	68 p. F	6V		SAL
	C 7	59.26.0680	68 pc F	64		SAL
	(8	59.26.0680	68 4 F	61		SAL
	C 9	59.26.0680	684 F	6V		SAL
	C 10	59.25.3101	100µF	161		FL
	CAA	51.25.3101	100 p.F	161		EZ
	161	50.05.0244	WE5534AN		Low moise	Si,Te,R
	16 2	50.05.0244	W5534AN		Low Moise	Si, Te, R
	/C 3	50.05.02.44	46534AN		Low noise	Si, To, R
	16 4	50.09.0106	1E5532AN		Low Hoise	Si,Te, R
	R 1	51.11.3222	242	1%		
	R 2	57.11.3222	242	104		
	R 3	57.11.3222	242	1%		
	R 4	57.11.3222	242	1%		
	R 5	57.11.4104	100 k			
	R 6	57.11.3222	242	1%		
	R 7	57.11.3222	262	1%		
	R 8	57.11.3272	242	10%		
	R I	57.11.3222	242	1%		
	R 10	57.11.4104	100 K			
	R 11		470	2%		
	R 12	57.11.4471	470	2%		
	R 13		470			

IND DATE	NAME	
①		CER - CERAMIC SI - SIGNETICS
③		SAL - SOLID ALUHINILIN TE - TEXOS
2 4.10.84	1/4	EL - ELECTROLYTIC R - RAYTHEON
18.7.84	1/-	1
0 25.10.62	fris.	9-24CH 1. 913. 164 00
STUDER	BUS SELE	CTOR 9-16 CH PL 1.913.160.00 PAGE 1 OF 3

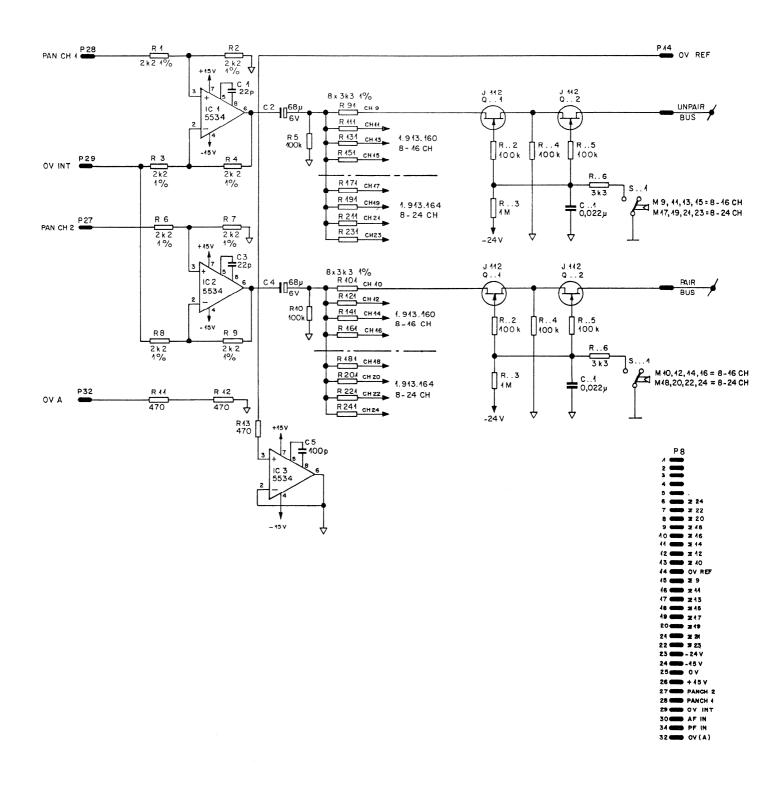
IND POS NO	l	PART I	NO	1	V	ALUE	- 1	1	,,	SPEC	FICAT	IONS/	EQUIV	ALEN	Т	1	MFR
R 14	57.	11.	322	2	2.	+2		1	4								
R 15	57.	11	322	2	2	k2		1	16								
R 16	57.	11.	327	2	2	K?		1	%		_						
R 17	67.	11	322	2	2	42		1	%								
R 18	57.	11	410	4	10	ok											
R 19	57,	11.	410	4	1	104											
R 20	1.91	2.0	01.	12	10	k		p	06 . 2	49							
R 21	1.91	2.0	01.	42	10	k		مر	u . (Los							
R 22	1.91	2.0	01.	42	10	4		P	as i	105							
R 23	<u> </u>				44	7		1	ks d	05	1						
R 24	1.91	12.0	01.	43	111	k			. 6								
R 25	<u> </u>				101	<u> </u>		114	rs 1	2)						
R 26	57.	11	333	2	3k.	3		1	%	/							
R 27	<i>57</i> .	11.	333	2	3 <i>k</i>	3		1	%								
R 28	57.	11.	233	2	3k	3		1	%								
R 28	57.	11.	333	2	34	3		1	%								
R 30	57,	11.	333	2	34	3		1	%								
931	57,	11.	322	z	Zk	2											
R 32	57	99.	020	6	50	•		ρ,	Τζ								
R 33	57.	93.	020	6	50			P	TC								
BU	SE	LEC	TOP	?				,									
CHANRE		11	13	15	17	13	2	?1	23	.10	12	14	16	18	20	22	24
ELEHEN	r .9.	11.	13.	15.	17.	19.	2	1.	23.	10.	12.	14.	16.	18.	20.	22.	24.
		8-160	н			8-24	(#				1-16	EH .			s-24c	н	
C1	59.	06.	022	3	0,0	224	F										
						•											
Q. , 1	50.	02.	0.35	0	11	1/2		1	112	F-1	8/1.	112	4/.	MPF	4392	2	√-FET
Q., 2	50	03.	035	0	11	1/2		1	117	F-18	111	12 A	11	IPF.	4392	?	V-FET
											·						
INDI DA	TE	l N	AME		 			•									
0																	
3			,														
2 4.10	84	Г	16														
1 18.7	34	W	_														
0 25.16	. 82	you.	70			g	_	24	CH	,	1.	913	3. 1	64.0	70		
		1							/-		<u> </u>				-		

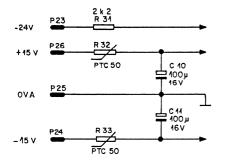
STUDER BUS SELECTO

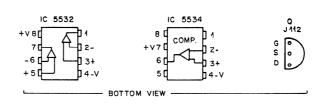
9-16 CH PL 1.913.160.00 PAGE 2 OF 3

IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	R. 1	57.11.2332	3 k 3	1%	
0	R 2	57.11.4104	100 k D		
L.	R 3	57.11.4105	IMA		
	R. 4	57 . 11 . 4104	100 K SL		
①	R5	57.11,4104	100 £ s		
		57.11.3332	343		
	51	55 .15.0002	2 XU	SWITCH Schodow	
			GREY	KNOB RED INDIC Schadow	
		42.01.0228	GREY	KNOB 10/4	
		42.01.0253	RED	COVER	
		42.01.0254	BLUE	COVER	
		42.01.0255	YELLOW	COVER	
L		42.01.0256	GREEN	COVER	
L	1	54.01.0305	C/S 5P		
	P	54.01.0359	32 P	2 x 16 EURO PRINT	
		53.03.0166		XIC DIL 8P	
					1
Г					1
					1
					1
			l		1-
			l		
	L	L	L		丄

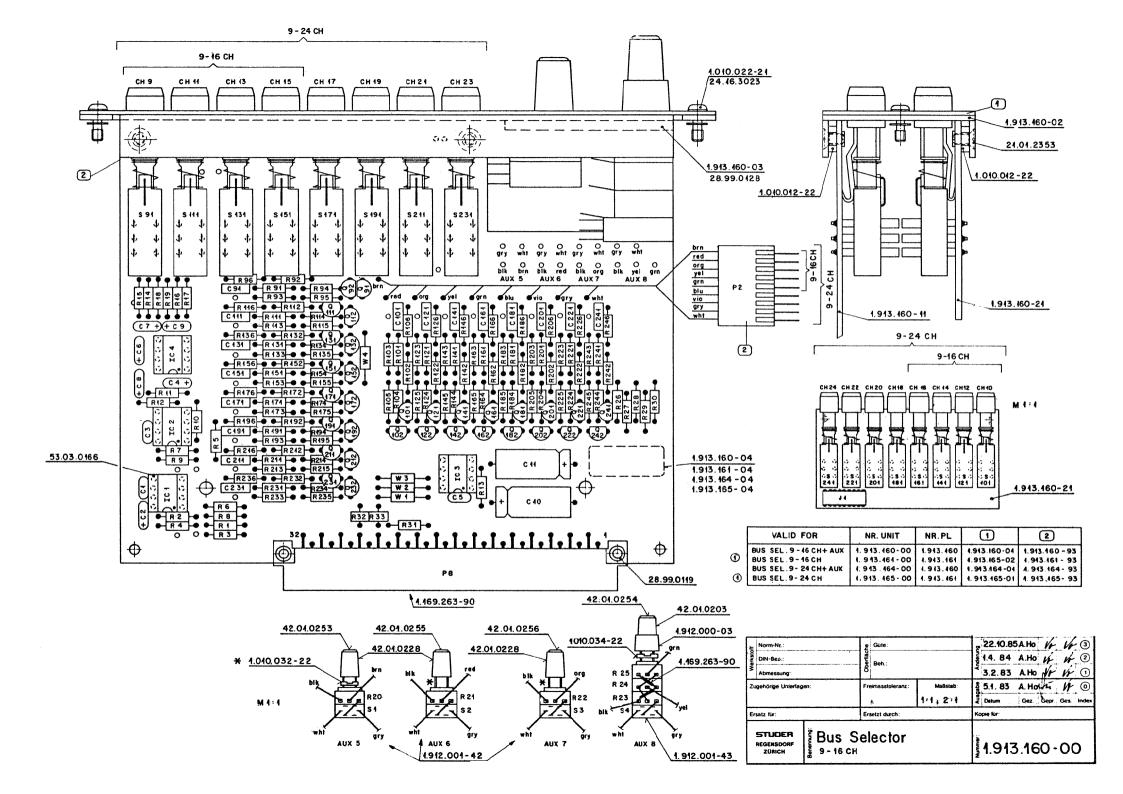
IND	DATE	NAME	L				1
4							
3							
2	4.10.84	Va					
①	18.7.84	1/2					
0	25.10,82		9 - 24 CH		1.913.	164.00	
5	TUDER	BUS SELECT	OR · 9-16 CH	PL	1.913.	160.00	PAGE 3 OF 3







DATE:	26.3.84	18.7. 84	4.40.84				
SIGN:	ML	uli	ul				
STUDER REGENSDORF	RHS	BUS SELECTOR		9 - 16	S CH	SC	1. 913. 161
ZÜRICH	003	JLLLC 1	OI (9-24	4 CH	SC	1. 913.165



IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	C 1	59.34.7220	27 pr		CER
	C 2	58.26.0680	68 p. F	EV	SAL
	C 3	51.34.2720	22 pF		CER
	64	59.26.0680	68 pF	64	SAL
2		59.34,4101	100 pF		CER
_					
	C 10	59.25.3101		161	FL
	CAA	51.75.3101	100 p.F	16V	<i>E</i> 2
	16 1	50.05.0744	W5334AN	Low moise	Si, Te A
	K 2	50.05.0244	W5534AN	Low poice	Si, Te, F
_	163	50.06.4744	46534A#	Low noise	si, īo, R
	0 4	F7 // 844	2/2		
-	R 4 P 2	57.11.3222	242	1%	
		57. 41.3722	24.2	1%	
-	R 3	57.14.8272	2k2		
-	-	57 -11.3222	212	1%	
\dashv		57.41.4104	100 k	1%	
-		57.11.3772 57.11.3772	242	1%	
-	8 8	57.44.3722	262	1%	
	7 1		 	1%	
	R AD	57. 11. 4104	2k2 150 k	4 /2	
	7 11	57.11.4471	#70	2%	
_		57.11.4471	470	2%	
_	R 13	57.11.4471	470	2%	

IND DATE	NAME	1
①		CER - CERAMIC SI - SIGNETICS
3		SAL - SOLID ALUMINIUM TE - TERGS
@ 9.40.84	1/4	EL - ELECTROLYTIC R - RAYTHEON
18.7.84	1/2	1
0 19. 3.84	grijo	9-24 CH 4. 913. 165.00
STUDER	BUS SELE	CTOR 9-16 CH PL 1.913.161.00 PAGE 1 OF 3

IND	POS NO		PAR	T NO		V	ALUE	4		SPEC	IFICA'	TIONS	/EQUI	VALEN	T		MFR
						<u> </u>		+									<u> </u>
						<u> </u>		_									
								\perp	.,								
								T									
								T		-							
								7		-							
				*********		_		\top									_
_						 		+									
_						1		+			·····						
-						 		+									
-								+									
_						<u> </u>		4									
_								4									
								\perp									
						1		1									
	931	57	. 11	. 32	22	24	2.	T									
	R 32	57	, 99	. 02	06	50	,	7	PTC								
	R 33					50			PIC								
	BUS							-									I
CH	ANREL			_		100	19	24	23	140	12	144	T,,	18	20	72	120
	EHENT				15.						./2.	14.	16.			22.	24.
	Nr.		1//			1.33.	8-240		1230	<u></u>	7-76		70.		8-240		124.
_						_				-	4				270		
-	C/	5,1	. 06	. 02	23	9,0	274	4									<u> </u>
_								4									
	Q., 1	50	, 02	.03	50	11	1/2	\perp	1112	F-d	8/1.	112	<u> </u>	MPF	439	2	V- F2
	2.,2	60	.03	. 03	50	11	1/2	١,	1117	F-AB	111	12 A	1	YPF.	4392	?	1-FE
	1							Τ									
								Т									
NDI	DAT	F	1	NAM													

9-24 CH

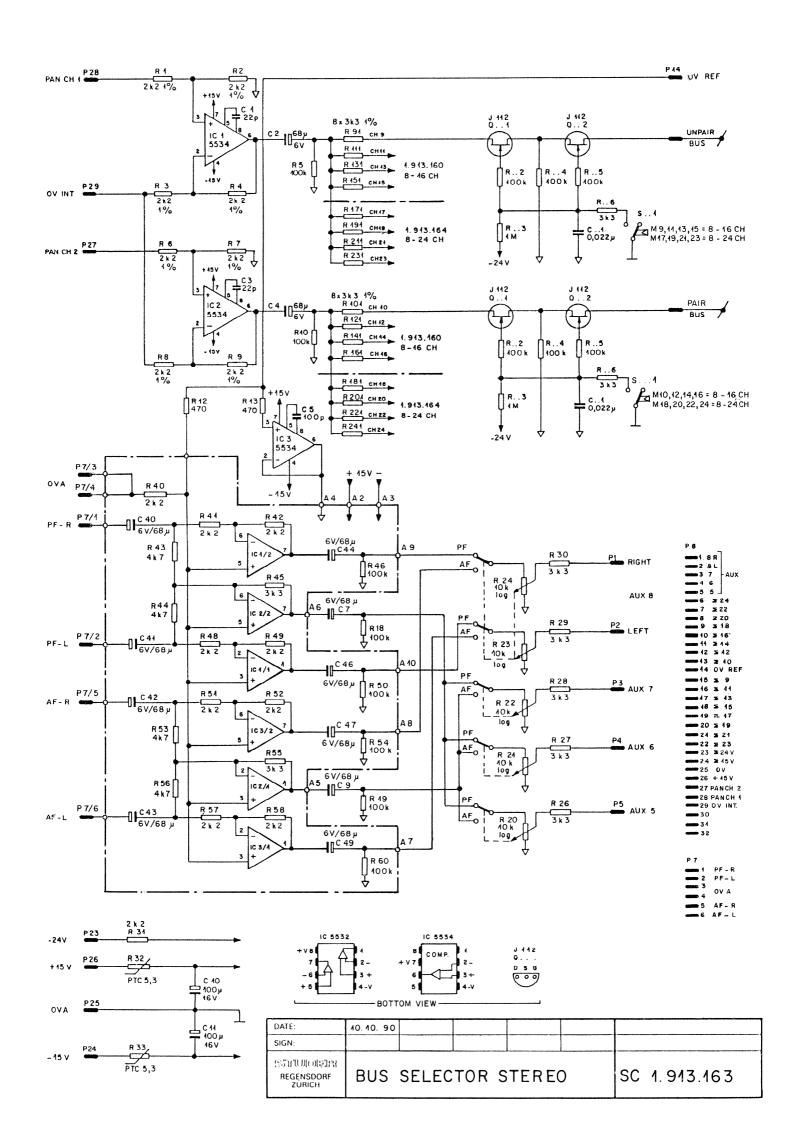
1.913.165.00 9-16 CH PL 1.913.161.00 PAGE 2 OF 3

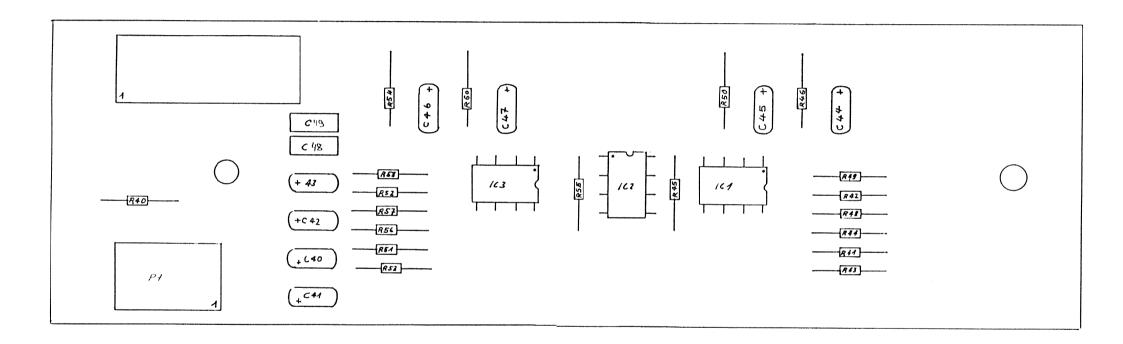
18.7.84 0 18.3. 84

STUDER BUS SELECTOR

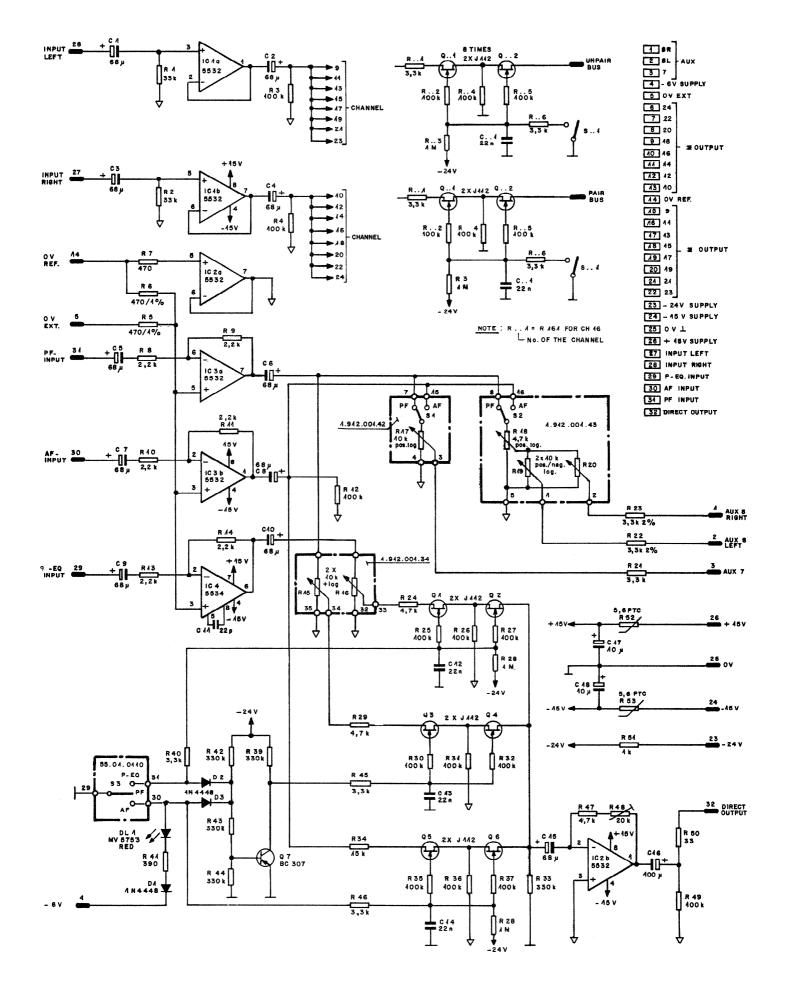
ND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	M
	R 1	57.11.8332	3 k 3	1%	Т
0	R 2	57.11.4104	100 ks		T
	R 9	57.11.4105	AHS		Τ
		57.11.4104	100 ks		Т
		,57.11.4104	100 ks		
		57.11.3332	3k3		
					T
	51	55 .15.0002	2 xU	SWITCH Schodow	
		65.03.0303	GREY	KNOB RED WDIC Schodow	
_		12.01.0222	GREY	KNOB 10/4	丄
		17.01.0253		COVER	_
		42.01.0254	BLUE	COVEL	<u> </u>
		42.01.0255		COVER	
		42.01.0256	GREEN	COVER	
					L
					L
	٩	54.01.0359	32 P	2 x 16 EURO PRINT	L
		53.03.0166		YIC DIL 8P	
					L
_					_
					L
					_
					1_
					1_
					1

ומאון	DATE	NAME		
(1)				
3				:
2	4.10.64	14		
0	18.7.84	Voy		
	19.3.84	Grige	9 - 24 CH	1.913.165.00
5	TUDER	BUS SELECTO	R 9-16 CH	PL 1.913.161.00 PAGE 3 OF 3

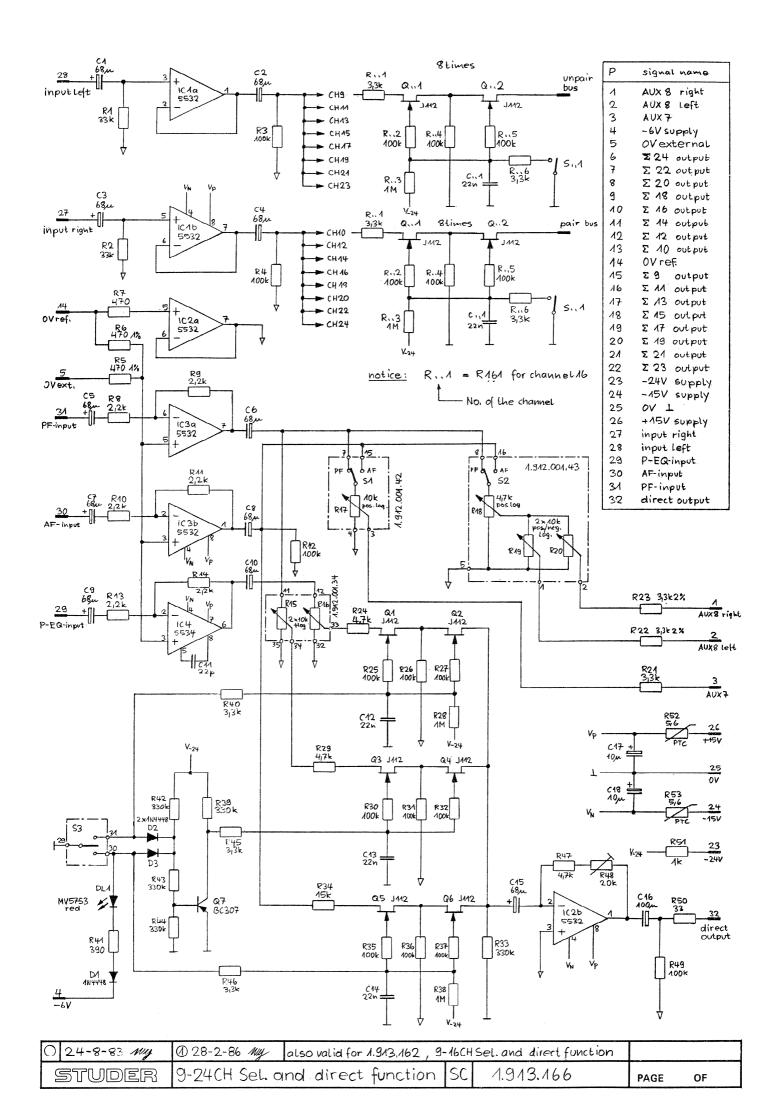


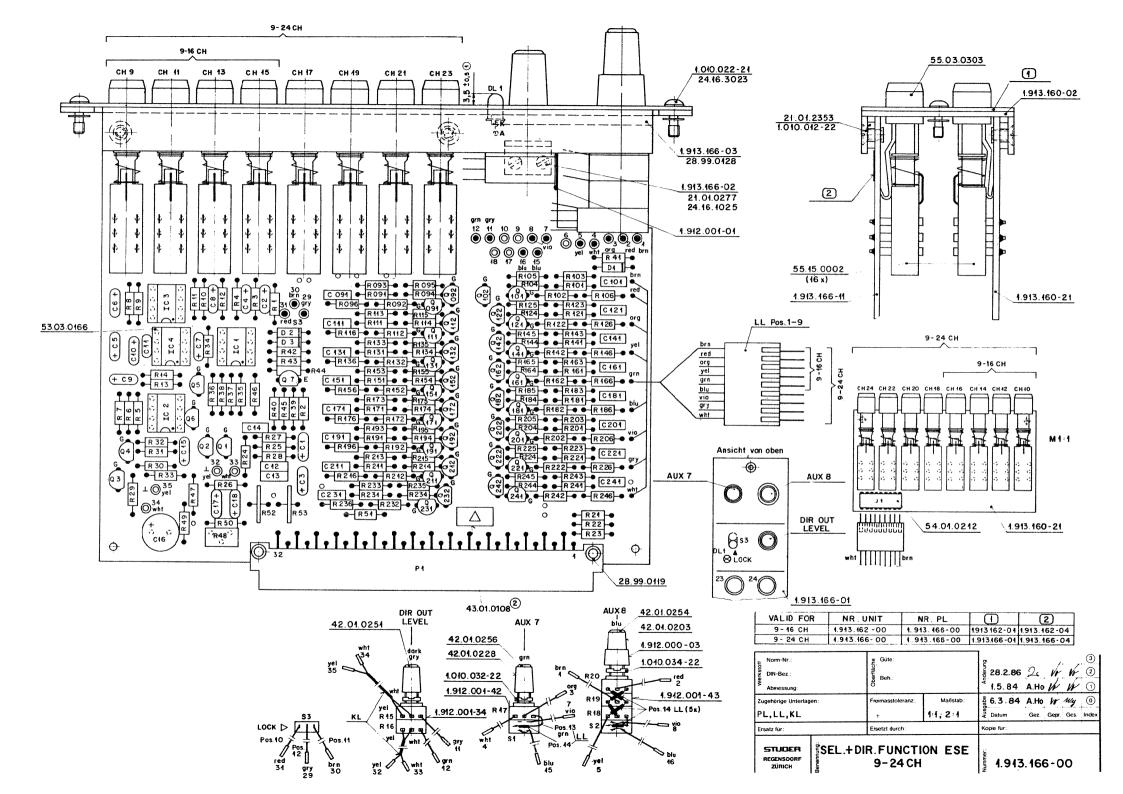


1.913.163.11



0) 24.8.83 W	e @ 27.5.86 We O	0	0
STUDER	9-24 CH SEL.WITH	916 CH	SC 1.913.162
REGENSDORF ZÜRICH	DIRECT OUTPUT	9 24 CH	SC 4.943.466





Ae.-Index C1 Ae.-Datum 03.02.86 Kopieausgabe 14.14 Uhr am 24.03.86

Visum WY

Ae.	Nummer		Titel	Зет	erkungen
	1.913.166.		l.+ direct	function	
Loc	I∙ Pas÷Nr•	Teil Nr.	Wert (Menge	e) Bezeichnung	Hersteller
			wer thenge		nersteiler
CO	C 1	59,26,0680	68 uF	SAL	
Cυ	C • • • • 2	59.26.0680	68 uF	SAL	
0.0	C • • • • • 4	59.26.063C 59.26.06SO	69 UF	SAL	
CO	(5	59.25.068C	63 UF 68 UF	SAL, SAL	
CO	(6	59.26.0680	68 UF	SAL	
C O	C 7	59.26.0680	69 uF	SAL	
CO	8 3	59.26.068C	68 uF	SAL	
CO	C • • • • 9	59.26.0630	58 UF	SAL	
-00	C1C	59.26.0680	63 uF	SAL	
00	C • • • • 11	59.34.2220	22 pF	CER	
CO.	C • • • • 12	59.06.0223	22 nF	Ρē	
CO	C • • • • 13	59.06.0223	22 nF	₽Ē	
CO	C 14	59.06.0223	22 nF	PE	
ÇΟ	C • • • • 15·	59.26.0630	68 uF	SAL	
CO	C16	59.22.4101	100 uF	EL	
60	C 17.	59.26.2100	10 uF	SAL	
ÇO	C 18	59.26.2100	1C uF	SAL	
00	C • • • × × 1	59.06.0223	22. nF	Pć see note	1)
CO	01	50.04.0125	1N4448		γns
CO	02	50.04.0125	1 14448		any
CO	C • • • • 3	50.04.0125	184448		any
ĊΩ	CL • • • 1	50.04.2111	MV5753	red	GI•HP
co	IC • • • • 1	50.09.0105	NE5532N	dual op.amr.	Sig+Ex+Pa
CO	IC • • • 2	50.09.0105	NE5532N	dual op.amp.	Sig.Ex. Ra
CO	IC • • • 3	50.09.0105	NE5532N	dual op.amp.	Sig.Ex.Ra
CO	IC • • • 4	50.05.0243	NE5534N	single op.amp.	Ti•Sio•Pa
C _i O	P • • • • 1	54.01.0359	2*16pin	euroconnector	Pu
co	G1	50.03.0350	J 112	N-JFST	NS.Mot.Six
00	Ç2	50.03.0350	J 112	N-JEET	NS.Mot.Six
00	Q3	50.03.0350	J 112	N-JEET	NS.Mot.Six
CO	C 4	50.03.0350	J 112	N-JFET	NS, Mot, Six
co	Q • • • • 5	50.03.0350	J 112	N-JFET	MS.Mot.Six
CO	Q6	5C.C3.0350	J 112	N-JFET	NS.Mot.Six
ĊO	C 7	50.03.0515	BC 307	PNP IC>100mA+ 8>10	00 any
CO	G • • • × × 1	50.63.0350	J 112	N-JFET see note 1	.) NS+Mot+Six
00	0 • • • x x 2	50.03.0350	J 112	N-JFET see note 1	.) NS+Mot+Six
00	R • • • • 1	57.11.4333	33 kOhm		
CO	R • • • • 2	57.11.4333	33 kOhm		
CO	R • • • • 3	57-11-4104	100 kühm		
00	R 4	57.11.4104	100 kOhm		
00	R • • • • 5	57,11,3471	470 Ohm	1%	
00	R • • • • 6	57.11.3471	470 Ohm	1%	

Ae.-Index 01 Ae.-Datum C3.02.86 Kopieausgabe 14.14 Uhr am 24.03.86

Visum WY

Ind	le PoseNre	Teil Nr.	dert(Menge) Bezeichnung Hersteller
CΟ	R 7	57.11.3471	470 Chm	
CO	R 8	57-11-4222	2.2 kOhm	2%
00	R9	57.11.4222	2.2 kOhm	2%
co.	R1C	57.11.4222	2.•2 kGhm	2 %
CO	R 11	57.11.4222	2.2 kOhm	2%
CO.	R 12	57.11.4104	100 kOhm	
CO	R 13	57.11.4222	2.2 kChm	2%
CO	R14	57.11.4222	2.2 kühm	2 %
CO.	R • • • • 15	1.912.001.34	iC kOhm	pos.log. potm. R15.R16
00	R16		10 kOhm	pos.log.
CO	R 17	1.912.001.42	16 kOhm	poseloge potme and switch Sl
ÇO	R18	1.912.001.43	4.7 kChm	
			pos.log.	potm.R18.R19.320 and switch S2
CO	R19		10 kOhm	pos-log.
00	R20		10 kOhm	neg.log.
.00	R • • • • 21	57.11.4332	3.3 kChm	2%
CO	R • • • • 22	57.11.4332	3.3 kOhm	.2%
00	R • • • • 23	57.11.4332	3.3 kOhm	2%
C 1	R • • • 24	57.11.4472	4.7 kOhin	
00	R • • • 25	57.11.4104	100 kahm	
00	R26 R27	57.11.4104 57.11.4104	100 kahm 100 kahm	
60	R • • • 28	57.11.4105	1 MGhm	
00	R 29	57.11.4472	4.7 kOhm	
63	R 30	57.11.4104	100 kahm	
CJ.	R31	57.11.4104	100 kOhm	
CO	R 32	57.11.4104	100 kühm	
Ċΰ	R33	57.11.4334	330 kOhm	
CO	R34	57.11.4153	15 kOhm	
CO	R 35	57.11.4104	100 kOhm	
CO	R 36	57.11.4104	100 kOhm	
CO	R37	57.11.4104	100 kGhm	
CO	R • • • 38	57-11-4105	1 MOhm	
CO	R 39	57.11.4334	330 kChm	
CO	R • • • 4 C	57.11.4332	3•3 kOhm	
00	R41	57.11.4391	390 Ohm	
CO	R • • • • 42	57.11.4334	330 kGhm	
CÓ	R • • • • 43	57-11-4334	330 kühm	
CO	R • • • • 44	57.11.4334	330 kOhm	
CO	R • • • • 45	57.11.4332	3.3 kGhm	
CO.	R • • • 46	57.11.4332	3.3 kOhm	
CO	R • • • • 47	57.11.4472	4.7 kOhm	
CO	R • • • • 48	58.01.9203	20 kOhm	trimming resistor
00	R • • • • 49	57-11-4104	100 kOhm	
CO	R50	57-11-4330	33 Chm	
00	R • • • • 51	57.11.4102	1 kOhm	DTC Dhilion No. 2222 4/2 01005
00	R••••52 R••••53	57.99.0209	5.6 Ohm	PTC Philips Nr. 2322 662 91005
00	Rxx1	57.99.0209	5.6 Chm 3.3 kOhm	PTC Philips Nr. 2322 662 91005
CO	R • • • × × 2	57 • 11 • 4332 57 • 11 • 4104		see note 1)
CO	Rxx2	57.11.4104 57.11.4105	100 kOhm 1 MOhm	see note 1)
00	Rxx4	57.11.4104	100 kOhm	see note 1) see note 1)
co	Rxx5	57.11.4104	100 kOhm	see note 1)
CO	Rxx6	57.11.4332	3.3 kOhm	see note 1)
-		-101101336	5 0 5 1 NOTH	300 11000 17

willI STUDER AG Positions Liste Nr.1.913.166.00 AE. 01 Seite 3

Visum WY

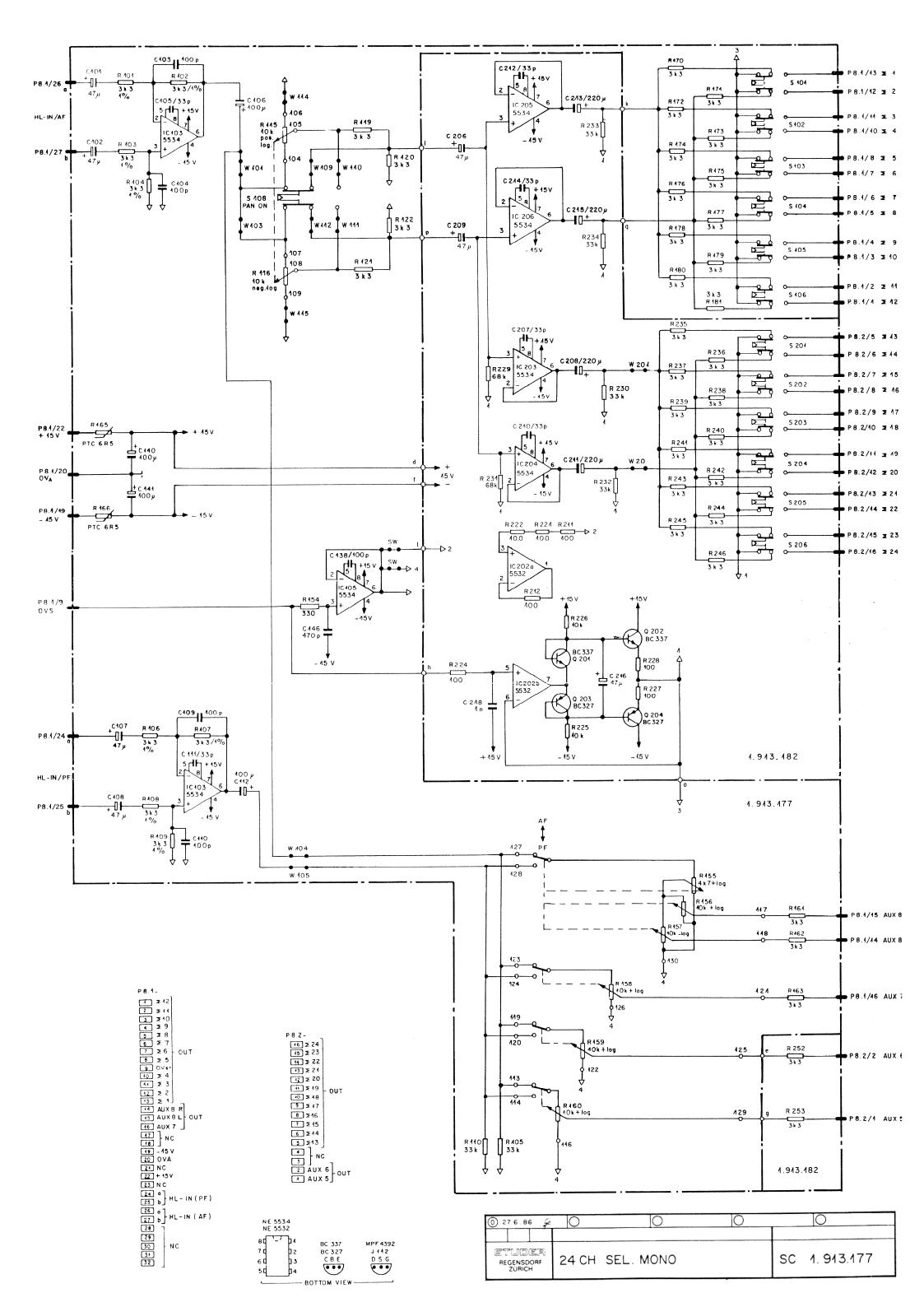
Ind. Pos.Nr.	Teil Nr.	Wert (Menge)	Bezeichnung	Hersteller		
CO S×1	55.15.0002 55.01.0110	2*U	see note 1)	Schadow ITT Dialight, C&K		

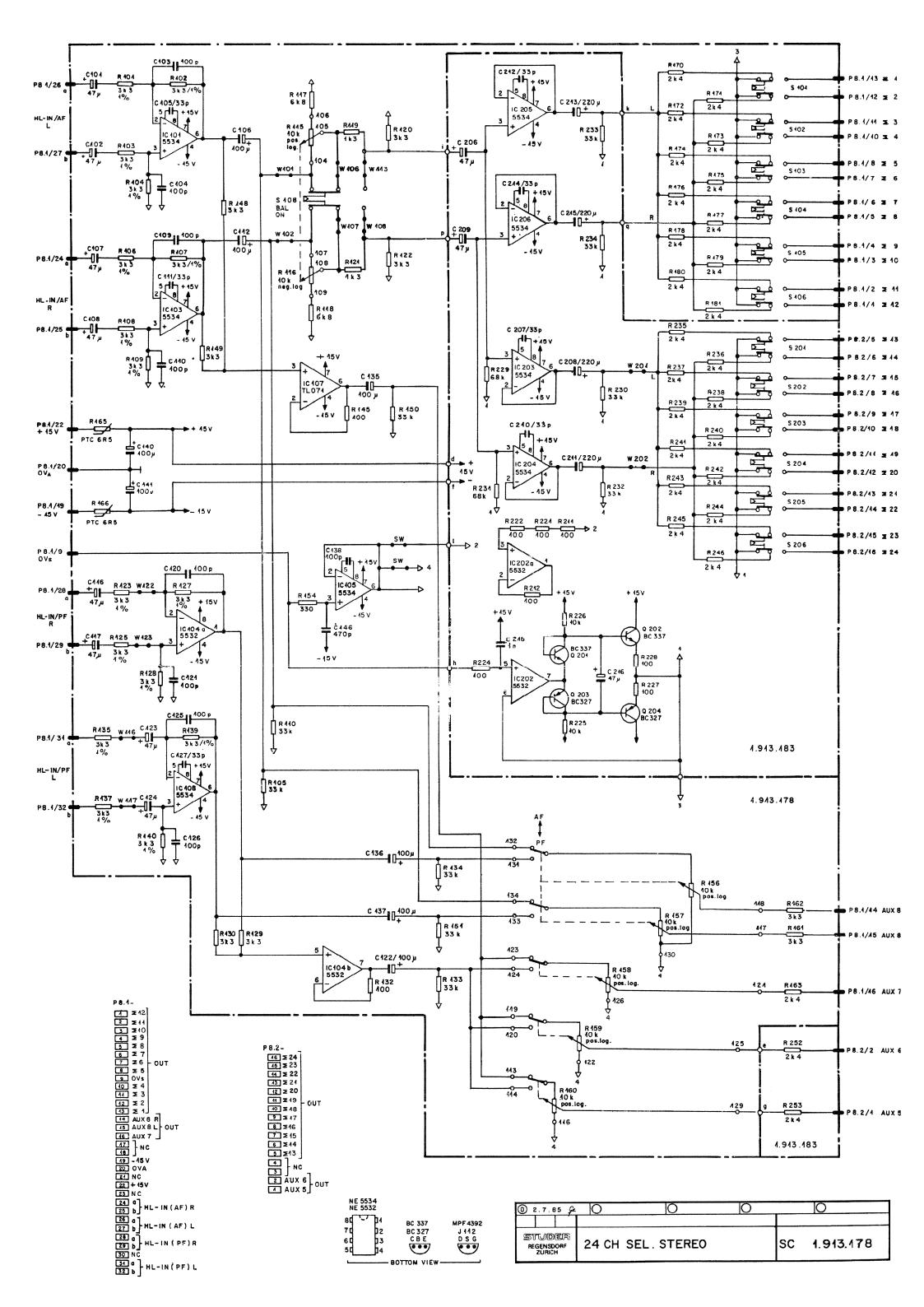
CER =ceramic, PE=polyester, SAL=solid aluminium lacquard

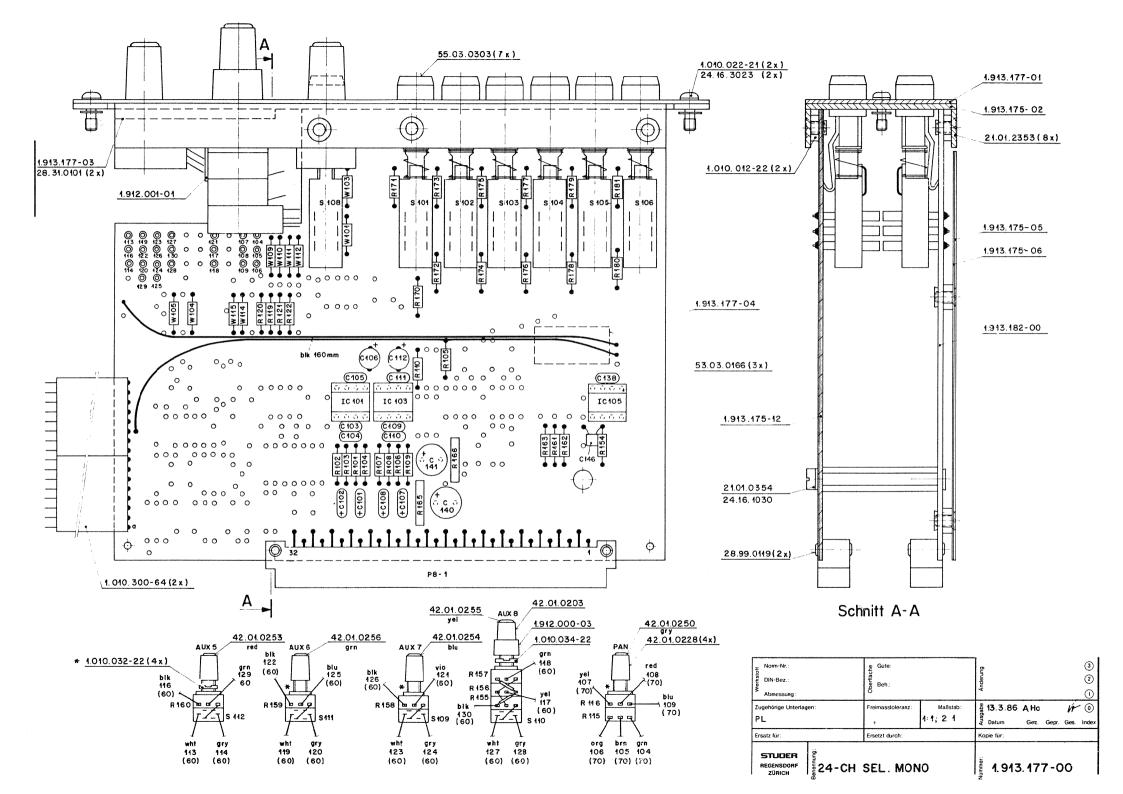
* This positions list is also valid for 1.913.162.00
* Ciese Positionslista ist auch für 1.913.162.00 gültig * 9-16CH.SEL. + DIRECT FUNCTION *

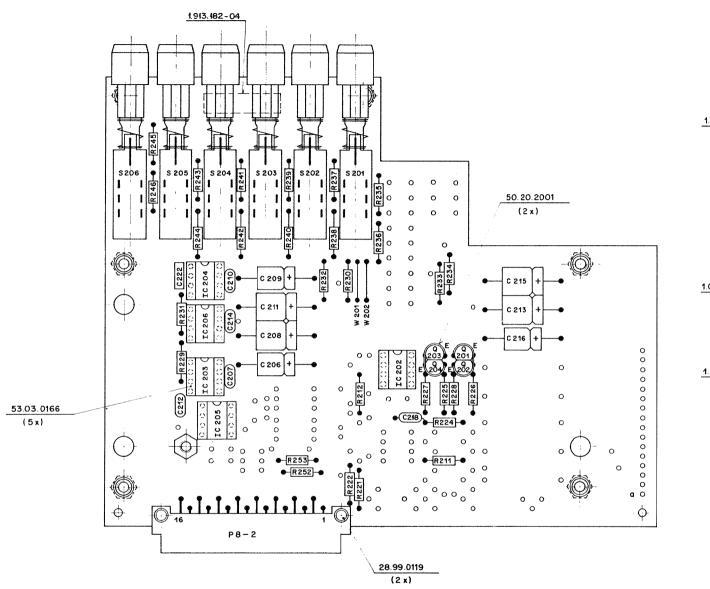
note 1): xx means the number of the channel xx steht für die Kanalnummer 1.913.162.00 bestuckt sind Kanal 9-16 (8x) 1.913.166.00 bestuckt sind Kanal 9-24 (16x)

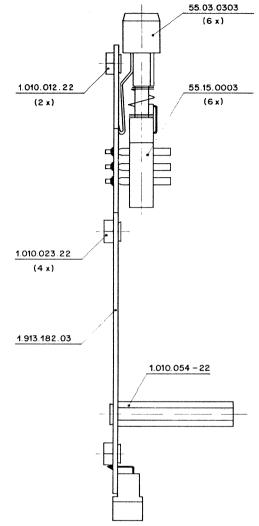
Ende der Positions Liste.











STUDER REGENSBORF ZÜRICH 6 SWIT	TCH MON	0	1.913.182 - 00			
Ersatz für:	Ersetzt durch:		Kopie für:			
Zugehörige Unterlagen: PL 1.913.177 - 00	Freimasstoleranz:	Маβstab∶ 2 : 1	9 19 11 85 Q 1: V 0 2 Datum Gez. Gepr. Ges. Index			
Norm-Nr.: DIN-Bez: Abmessung:	Güte. Güte. Beh		3 2 1			

Ae.-Index CO. Ae.-Datum 03.05.85 Kopieausgabe 16.44 Uhr am 15.04.86

Visum TA

Ae.	Nummer		Titel				Bemerkungen
60	1.913.177.0	O 24-CH-SEL	. MONO				
Ind	· ºcs•Nr•	Teil Nr.	Wert (Menge)		Bezeict	hnung	Hersteller
co	C101	59.26.0470	47 uF	20%	6.3V	SAL	
00	C102	59.26.0470	47 UF	20%	6 • 3 V		
00	C • • • 103	59.34.4101	10C pF			CE	
00	C • • • 104	59.34.4101	100 pF			CE	
CO	C105	59.34.2330	33 pF 100 uF	-20%	100	C E	
00	C106 C107	59.22.3101 59.26.0470	47 uF	20%	6.37		
CO	C • • • 108	59.26.0470	47 UF	20%	6.3V		
CO	C109	59.34.4101	100 pF			CE	
00	C110	59.34.4101	100 pF			CE	
CO	C111	59.34.2330	33 pF			CE	
30	C 112	59.22.3101	10C uF	-20%	100	EL	
CO	C • • • 113		not used				
00	C 114		not used				
CO	C115		not used				
00	C116		not used				
00	C117 C118		not used not used				
00	C119		not used				
CO	C • • • 120		not used				
00	C • • • 121		not used				
co	C • • • 122		not used				
CO	C • • • 123		not used				
co	C 124		not used				
CO	C • • • 125		not used				
CO	C126		not used				
CO	C 127		not used				
00	C128		not used				
CC	C • • • 129		not used				
CO	C • • • 13C		not used				
CO	C131		not used not used				
co	C • • • 133		not used				
co	C134		not used				
CO	C 135		not used				
Ċυ	C136		not used				
CO	C 137		not used				
CO	C138	59.34.4101	100 pF			CE	
00	C139		not exist				
00	C 14C	59.22.4101	100 uF	~20%	167	EL	
CO	C141	59.22.4101	100 uF	-20%	167	EL	
CO	C142 C143		not used not used				
0.0	(144		not used				
60	C144		not used				
0.2	C 146	59.34.5471	470 pF			CE	
			•				
CO	IC101	50.05.0243	NE5534N	sing	le op	amp•	Sig∙Ra
CO	IC102		not used				

Ae.-Index 00 Ae.-Datum 03.05.85 Kopieausgabe 16.44 Uhr am 15.04.86

Ind	· Pos·Nr ·	Teil Nr.	Wert (Menge)		Bezeich	nung	Hersteller
00	IC •• 103	50.05.0243	NE5534N not used	single	e op• a	amp.	Sig, Ra
00	IC 105	50.05.0243	NE5534N	single	op. a	• qm	Siq.Ra
CO	IC 106		not used	-			
00	10107		not used				
00	10108		not used				
00	мр1	53.03.0166	3 pcs	IC-so	ket 8	l pin	
co	P8.1	54.01.0359	2*16pin	euroc	onnecto	or	Bu
CO	R101	57.11.3332	3.3 kOhm	1 %	0.25W		
00	R102	57.11.3332	3.3 kOhm	12	0.25W		
00	R103	57.11.3332	3.3 kOhm	1%	0.25W		
CO	R104	57.11.3332	3.3 kOhm	1%	0.25W		
00	R105	57.11.4333	33 kOhm	5%	0.25W		
CO.	R106	57.11.3332	3.3 kOhm	12	0.25W		
00	R107	57-11-3332	3.3 kOhm	12	0.25W		
CO	R • • • 108	57.11.3332	3.3 kOhm 3.3 kOhm	1 % 1 %	0.25W		
CO	R109 R110	57.11.3332 57.11.4333	33 kOhm	5%	0.25W		
00	R111	2101104222	not used	J 70	0.22		
00	R 111		not used				
00	R113		not used				
00	R114		not used				
00	R • • • 115	1.912.001.35	10 kOhm	nos.	100.	combin	ned with R116 St
co	R116	1.,12.001.33	10 kOhm	post	neg.lo		see R115
CO	R • • • 117		not used				
00	R118		not used				
00	R119	57.11.4332	3.3 kOhm	5%	0.25W		
00	R120	57.11.4332	3.3 kOhm	5%	0.25W		
CO	R121	57.11.4332	3.3 kOhm	5%	0.25W		
00	R122	57.11.4332	3.3 kOhm	5%	0.25W		
CO	R123		not used				
CO	R124		not used				
CΟ	R125		not used				
CO	R 126		not used				
00	R • • • 127		not used				
CO	R • • • 128		not used				
CO	R129		not used				
CO	R130		not used				
00	R131		not used				
00	R • • • 132		not used not used				
00	R133 R134		not used				
CO	R135		not used				
00	R136		not used				
00	R137		not used				
CO	R138		not used				
CO	R139		not used				
CO	R140		not used				
CO	R141		not used				
CO	R142		not used				
CO	R 143		not used				

Ae.-Index 00 Ae.-Datum 03.05.85 Kopisausgabe 16.44 Uhr am 15.04.86

	Pos-Nr.	Teil Nr.	Wert (Menge)	Bezei	chnung	Hersteller
	2144		not used			
	2145		not used			
	2146		not used			
	2147		not used			
	8148		not used			
	R149		not used			
	150		not used			
	2151		not used			
	3 152		not used not used			
	R153	57-11-4331	330 Ohm	5% 0.25	w	
	2155	1.912.001.43	4.7 kOhm	,, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	••	
00 6		1.712.001.13	10% pos.10	og. Co	mbined with	h R156/R157 St
00 R	2156			10% pos.		e R155
	2157			10% neq.		e R155
	1158	1.912.001.42	1C kOhm			
			10% pos.16	oq. va	riable res	istor St
00 R	159	1.912.001.42	10 kOhm	3		
			10% pos.10	og. va	riable resi	istor St
00 R	1160	1.912.001.42	10 kOhm			
			10% pos.10		riable res	istor St
	2161	57-11-4332	3.43 k0hm	5% 0.25		
	₹•••162	57.11.4332	3.3 kOhm	5% 0.25		
	2163	57.11.4332	3.3 kOhm	5% 0.25	W	
	2164		not used			
00 A	2165	57.92.1271	6.5 Ohm	PTC P	biline Ne	2322 662 12711
••	• • • • •	F7 02 1271	I = 270mA 6.5 Ohm	PIC P	mirthe wie	2322 002 12111
CO F	₹166	57.92.1271	I= 270mA	PTC P	hiline Nr.	2322 662 12711
CO P	2167		not used			
	2168		not used			
	2169		not used			
	2170	57.11.4332	3.3 kOhm	2% 0.25	¥	
	R171	57.11.4332	3.3 kOhm	2% 0.25	W	
00 F	R172	50.11.4332	3.3 kOhm	2% 0.25		
CO F	R173	57.11.4332	3.3 kOhm	2% 0.25		
00 F	2174	57.11.4332	3.3 kOhm	2% 0.25		
	R175	57.11.4332	3.3 kOhm	2% 0.25		
	R176	57.11.4332	3.3 kOhm	2% 0.25		
	R177	57.11.4332	3.3 kOhm	2% 0.25		
	R178	57.11.4332	3.3 kOhm	2% 0.25		
	R179	57.11.4332	3.3 kOhm	2% 0.25		
	R18C	57.11.4332	3.3 kOhm	2% 0.25		
	R181	57.11.4332	3.3 kOhm	2% 0.25	W	
	R • • • 182		not used not used			
	R • • • 183		not used			
	R184 R185		not used			
00 1			0360			
00	S101	55.15.0003	2*U	3u Au	button	red ITT
	5 102	55.15.0003	2+0	3u Au	button	
	5 103	55.15.0003	2.*∪	3u Au	button	
	5 • • • 104	55.15.0003	2+0	3u Au	button	
	S105	55.15.0003	2 ‡ U	3u Au	button	: red ITT

Ae.-Index 00 . Ae.-Datum 03.05.85 Kopieausgabe 16.44 Uhr am 15.04.86

Ind	. Pos.Nr.	Teil Nr.	Wert (Menge)	Bezeich	nung	Hersta	ller
00	S106 S107	55.15.0003	2*U not used	3u	Au	button	: red	111
CO	5108	55.15.0003	2*U	3 u	Au	button	: red	ITT
00	W101 W102		not used					
00 00	h 103							
00	W105		not used					
CO	W107		not used					
CO	W108		not used					
CO	h 109							
00	W110							
CO	W111							
CO	W112							
00 C0	W113		not used					
00	h 115							
co	W116		not used					
CO	h117		not used					
CO	h • • • 118		not used					
CO	h • • • 119		not used	63 - • •			mm:	
00	W120 W121	1.010.300.64	8-wire 8-wire	flate			mm	
CO	K122	1.010.500.04	not used	1180	.0016	,,		
ÇO	W123		not used					
0.0	h 124		not used					
CO	h125		not used					
0.0	C • • • 201		not used					
CO	C • • • 202		not used					
00	C • • • 203		not used					
00	C • • • 204 C • • • 205		not used not used					
00	C • • • 206	59.25.3470	47 uF	-20%	167	EL		
CO	C207	59.34.2330	33 pF		7	CE		
CO	C • • • 208	59.25.1221	220 uF	-20%	6.37	EL		
CO	C • • • 209	59.25.3470	47 uF	-20%	167	EL		
00	C210 C211	59.34.233C 59.25.1221	33 pF 220 uF	-20%	6 a 3 V	CE EL		
CO	C • • • 212	59.34.2330	33 pF	-20%	0451	CE		
CO	C213	59.25.1221	220 UF	-20%	6 • 3 V	EL		
00	C • • • 214	59.34.2330	33 pF			CE		
CO	C • • • 215	59.25.1221	220 uF	-20%	6.37	EL		
CO	C • • • 216	59.25.3470	47 uF	-20%	16V	EL		
CO	C • • • 217	50 33 4103	not used 1 nF			CE		
00	C • • • 218	59.32.4102	not used			e c		
co	C • • • 22C		not used					
00	C • • • 221		not used					
CO	C • • • 222	59.06.0223	22 nF			PE		
CO	C • • • 223		not used					
00	C • • • 224		not used					

Ae--Index 00 Ae--Datum 03-05-85 Kopieausgabe 16-44 Uhr am 15-04-86

Ind. Pos.Nr.	Teil Nr.	Wert (Menge) B	ezeichnung	Hersteller
00 IC201 00 IC202 00 IC203 00 IC204 00 IC205 00 IC206	50.09.0105 50.05.0243 50.05.0243 50.05.0243 50.05.0243	not used NE5532 NE5534N NE5534N NE5534N NE5534N	dual single single single single	op. amp.	Sig+Ex+Ra Sig+Ra Sig+Ra Sig+Ra Sig+Ra Sig+Ra
CO MP2	53.03.0166 50.20.2001	5 pcs 2 pcs	IC-soc	ket 8 pin 2 * TO 92	St
00 P8.2	54.11.2007	2#8 pin	euroco	nnector	Bu
CO C201 CO Q202 DO C203 CO C204	50.03.0516 50.03.0516 50.03.0625 50.03.0625	BC 337 BC 337 BC 327 BC 327	NPN NPN PNP PNP	matched with	Sie
CO R201 CO R202 CO R203 OO R204 CO R205 OO R206 CO R206 OO R206 OO R209 OO R209 OO R210 OO R211 CO R212 OO R213 OO R214 CO R215 OO R216 OO R216 OO R216 OO R217 OO R218 OO R218 OO R219 OO R219 OO R210 OO R210 OO R210 OO R210 OO R210 OO R210 OO R210 OO R210 OO R2210 OO R2210 OO R2210 OO R2220 OO R2231 OO R2231 OO R2332 OO R2331 OO R2332 OO R2332 OO R2332 OO R2332 OO R2332	57.11.4101 57.11.4101 57.11.4101 57.11.4101 57.11.4103 57.11.4103 57.11.4003 57.11.4003 57.11.4333 57.11.4333 57.11.4333 57.11.4333 57.11.4333 57.11.4333	not used not	2% 2% 55% 55% 55% 55% 55% 55% 55% 55% 55	0.25W 0.25W 0.25W 0.25W 0.25W 0.25W 0.25W 0.25W 0.25W 0.25W 0.25W 0.25W 0.25W 0.25W	

WILLI STUDER AG Positions Liste Nr.1.913.177.00 AE. 00 Seite 6

Ae.-Index 00 Ae.-Datum 03.05.85 Kopieausgabe 16.44 Uhr am 15.04.86

Visum TA

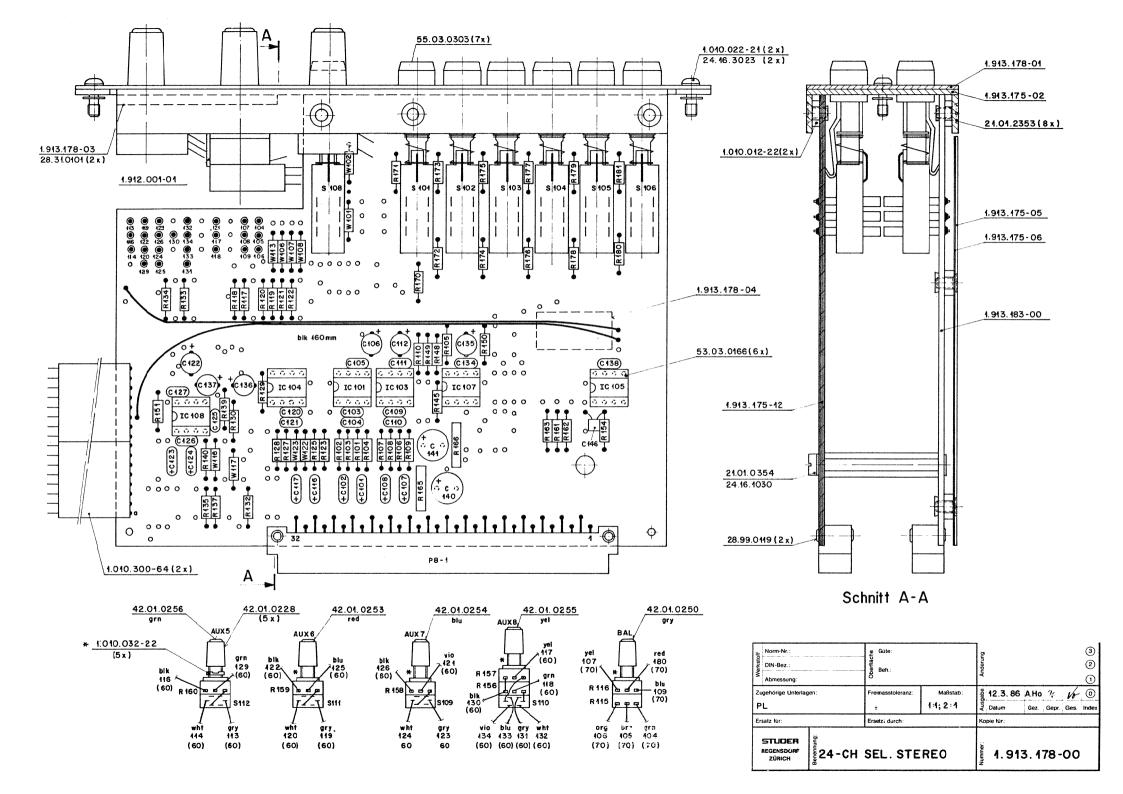
Ind	• Pos•Nr•	Teil Nr•	Wert(Menge)	Bezeic	hnung	Hersteller
00	R237	57.11.4332	3.3 kOhm	2% 0.25W		
00	R238	57.11.4332	3.3 kOhm	2% 0.25W		
00	R239	57.11.4332	3.3 kOhm	2% 0.25W		
00	R240	57.11.4332	3.3 kOhm	2% 0.25W		
00	R241	57.11.4332	3.3 kOhm	2% 0.25W		
co	R 242	57.11.4332	3.3 kOhm	2% 0.25W		
00	R243	57.11.4332	3.3 kOhm	2% 0.25W		
00	R • • • 244	57.11.4332	3.3 kOhm	2% 0.25W		
CO	R 245	57.11.4332	3.3 kOhm	2% 0.25W		
co	R 246	57.11.4332	3.3 kGhm	2% 0.25W		
CO	R247		not used			
00	R • • • 248		not used			
co	R 249		not used			
00	R 25C		not used			
CO	R251		not used			
CO	R252	57.11.4332	3.3 kOhm	5% 0.25W		
00	R • • • 253	57.11.4332	3.3 kOhm	5% 0.25W		
co	5201	55.15.0003	2*∪	3u Au	button : re	ed ITT
00	S202	55.15.0003	2≉U	3u Au	button : re	ed ITT
CO	S203	55.15.0003	2*U	3u Au	button : re	ed ITT
CO	\$ 204	55.15.0003	2*U	3u Au	button : re	ed ITT
CO	S205	55.15.0003	2 ÷ U	3u Au	button : re	ed ITT
CO	5206	55.15.0003	2*∪	3u Au	button : re	ed ITT

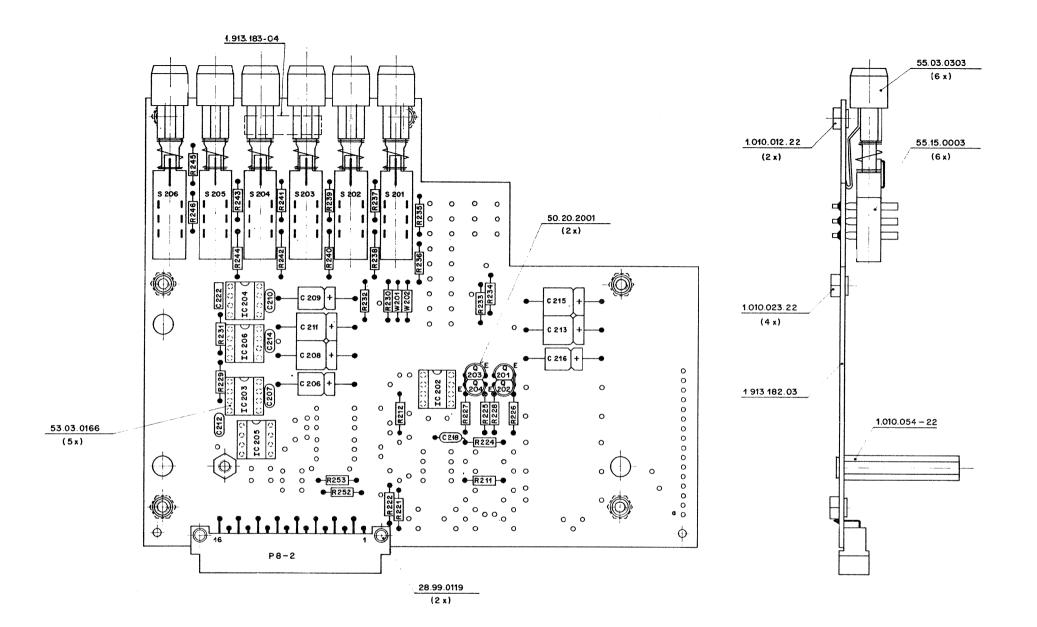
00 W...201 00 W...202

CE=Ceramic, CF=Carbon Film, EL=Electrolytic, MF=Metal Film, PE=Polyester, FP=Polypropylen, PS=Polystyrol

MANUFACTURER: Bu=Burndy, Ex=Exar, Fc=Fairchild, GI=General Instrument HP=Hewlett Packard, ITT=Intermetall, Mot=Motorola, Nat=N (Matsushita), NS=National Semiconductors, Ph=Philips, Ra=Raytheon, Sig=Signetics, Six=Siliconix, St=Studer, TI=Texas Instrument

Ende der Positions Liste.





Zugehorige Unterla	Atmessung Zugehonge Unterlagen PL 1.913.178-00 Ersetzt für Ersetzt für Freimasstoleranz Maßstab 2 : 1			de 19.11.85 P Datum	Q _e Gez	Q. Gepr	VV Ges	(O) Index
STUDER REGENSDORF ZÜRICH		TCH STEF	REO	1.913.	183 -	-0	0	

Titel

Ae.-Index 00 Ae.-Datum 03.05.85 Kopieausgabe 16.44 Uhr am 15.04.86

Ag.

Nummer

Visum TA

Bemerkungen

AG.	Nummer		11561			56	merkungen	
	1.913.178.0	0 24-CH-SEL	. STEREO					
~-								
	000 110	Toil No	Nort (Nonco		Bozoici	201100	Hors	teller
Ina	. Pcs.Nr.	Teil Nr.	Wert (Penge		Bezeici			cerrer
00	C101	59.26.0470	47 uF	20%	6.3V			
	C102	59.26.0470	47 uF	20%	6.37			
00	C103	59.34.4101	100 pF			CE		
CO	C 104	59.34.4101	100 pF			ÇE		
CO	C 105	59.34.2330	33 pF			CE		
CQ	C106	59.22.3101	100 uF	-20%	100	EL		
CO	C 107	59.26.0470	47 uF	20%				
00	C108	59.26.0470	47 UF	20%	6 • 3 V			
CO	C 109	59.34.4101	100 pF			CE		
CO		59.34.4101	10C pF			CE		
00	C111	59.34.2330	33 pF			CE		
CO	C • • • 112	59.22.3101	100 uF	-20%	100	EL		
CO.	C 113		not used					
00	C 114		not used not used					
00	C 115	59.26.0470	47 uF	20%	6 • 3 V	SAI		
CO	C116	59.26.0470	47 UF	20%				
00	C118	37.20.0470	not used	204	0.51	346		
00	C119		not used					
CO	C • • • 12C	59.34.4101	10C pF			CE		
co	C121	59.34.4101	100 pF			CE		
CO	C 122	59.22.3101	100 uF	-20%	10V	EL		
co	C123	59.26.0470	47 uF	20%	6 • 3 V	SAL		
CO	C 124	59.26.0470	47 uF	20%	6.3V	SAL		
CO	C 125	59.34.4101	100 pF			CE		
00	C 126	59.34.4101	100 pF			CE		
00	C 127	59.34.2330	33 pF			CE		
CO	C 128		not used					
CO	C+++129		not used					
00	C • • • 13C		not used					
00	C131		rot used					
CO	C • • • 132		rot used					
CO	C 133	EO 3/ 3330	not' used			CE		
00	C 134	59.34.2330	33 pF 100 uF	-20%	100			
CO	C • • • 135 C • • • 136	59.22.3101 59.22.3101	100 UF	-20%				
00	C137	59.22.3101	100 uF	-20%	100	EL		
CO	C 138	59.34.4101	100 pF	204		ČĒ		
CO	C 139		not exist					
CO	C140	59.22.4101	100 uF	-20%	16V	EL		
CO	C141	59.22.4101	100 uF	-20%	1 o V	EL		
00	C 142		not used					
00	(143		not used					
00	C 144		not used					
CO	C 145		not used					
C2	C146	59.34.5471	470 pF			€E		
		en ne na: 3	NEEE34P		10.00	200		Siq.Ra
00	10101	50.05.0243	NE5534N not used	sing	le op.	amb.		319110
00	10102		not asea					

Ae.-Index 00 Ae.-Datum 03.05.85 Konieausgabe 16.44 Uhr am 15.04.86

Ind	Pos.Nr.	Teil Nr.	Wert (Menge)	B	lezeichnung	Hersteller
00	IC103	50.05.0243	NE5534N	single	op. amp.	Sig,Ra
CO	10104	50.09.0105	NE5532	dual	op. amp.	Sig+Ex+Pa
00	IC 105	50.05.0243	NE5534N	single	op. amp.	Sig•Ra
00	IC 106		not used	-		
co	10-107	50.05.0243	NE5534N	single	op. amp.	Sig∗Ra
00	10108	5C.05.0243	NE5534N	single	op. amp.	Sig∗Ra
00	MP1	53.03.0166	6 pcs	IC-soc	ket 8 pin	
CO	P • • • 8 • 1	54.01.0359	2#16pin	euroco	nnector	Pu
CO	R101	57.11.3332	3.3 kOhm	1%	0.25W	
0.0	R • • • 102	57.11.3332	3.3 kOhm	1%	0.25W	
00	R103	57.11.3332	3.3 kOhm	1%	0.25W	
CO	R104	57.11.3332	3.3 kOhm	1%	0.25W	
00	R105	57.11.4333	33 k0hm	5%	0.25₩	
00	R106	57.11.3332	3.3 kOhm	1%	0.25₩	
CO	R107	57.11.3332	3.3 kChm	1%	0.25W	
00	R108	57.11.3332	3.3 kOnm	1%	0.25W	
CO	R109	57.11.3332	3.3 kOhm	1%	0.25W	
00	R110	57.11.4333	33 kOhm	5%	0.25W	
eo	R111		not used			
00	R112		not used not used			
00	R113		not used			
00	R115	1.912.001.35	10 kOhm	005	log. comb	ined with R116 St
00	R116	1.,12.001.33	10 kOrm	,,,,,,,,	neq.log.	see R115
CO	R117	57.11.4682	6.8 kChm	5%	0.25W	
CO	R118	57.11.4682	6.8 kOhm	5%	0.25W	
00	R 119	57.11.3132	1.3 kOhm	5%	0.25W	
CO	R120	57.11.4332	3.3 kOhm	5%	0.25W	
ÇQ	R 121	57.11.3132	1.3 kOhm	5%	0.25W	
CO	R 122	57.11.4332	3.3 kOhm	5%	0.25W	
CO	R123	57.11.3332	3.3 kOhm	1%	0.25W	
CO	R 124		not used			
00	R125	57.11.3332	3.3 kOhm	12	0.25W	
00	R126		not used	,		
CO	R127	57.11.3332	3.3 kOhm	1%	0.25W	
CO	R128	57.11.3332	3.3 kChm	1%	0.25W	
CO	R129	57.11.4332	3.3 kOhm	5%	0.25W	
00	R130	57.11.4332	3.3 kOhm	5%	0.25W	
CO	R131 R132		not used 100 Ohm	5%	0.25W	
CO	R132	57.11.4101 57.11.4333	33 kOhm	5%	0.25W	
00 00	R134	57.11.4333	33 kOhm	5%	0.25W	
00	R135	57.11.3332	3.3 kOhm	1%	0.25W	
co	R136	J	not used			
CO	R137	57.11.3332	3.3 kOhm	1%	0.25W	
CO	R138		not used		-	
00	R139	57.11.3332	3.3 kOhm	12	0.25W	
CO	R146	57.11.3332	3.3 kOhm	12	0.25W	
00	R141		not used			
CO	R142		not used			
00	R143		not used			

Ae.-Index 00 Ae.-Datum 03.05.85 Kopieausqabe 16.44 Uhr am 15.04.86

Visum TA

Ind	· Pos·Nr ·	Teil Nr.	Wert (Menge)	Bezeichnung	Hersteller
co	R144		not used		
co	R 145	57.11.4101		5% 0.25W	
00	R146	2111111111	not used		
00	3 147		not used		
CO	R148	57.11.4332		2% 0.25W	
00	R149	57.11.4332		2% 0.25W	
CO	R150	57.11.4333	33 kOhm	5% 0.25W	
00	R151	57.11.4333	33 kOhm	5% 0.25W	
CO	R152		not used		
CO	8 153		not used		
00	R154	57.11.4331	330 Ohm	5% 0.25W	
00	R155		not used		
00	R156	1.912.001.44	10 kOhm		
			10% pos.lo		with R157 St
CO	R157			O% pos∗log∗	see R156
CO	R158	1.912.001.42	10 kOhm		
			10% pos.lo	g. variable	resistor St
00	R • • • 159	1.912.001.42	1C kOhm		
			10% posito	g. variable	resistor St
CO	R16C	1.912.001.42	10 kOhm		
			10% poselo		resistor \$t
CO	R161	57.11.4332		2% 0.25W	
00	R162	57-11-4332		2% 0.25W 2% 0.25W	
00	R163	57.11.3242		2% 0.25W	
CO	R164	57 62 1271	not used 6.5 Ohm		
CO	R165	57.92.1271	6.5 Ohm I= 270rA	PTC Philips	Nr.2322 662 12711
••		57.92.1271	6.5 Ohm	PIC PHILIPS	N1 *2 322 002 12 111
CO	R166	51.92.1211	I = 270rA	PTC Philips	Nr.2322 662 12711
co	R167		not used	FIG FILLIPS	
00	R168		not used		
00	R169		not used		
CO	R 17C	57-11-3242		2% 0.25W	
00	R 171	57.11.3242		2% 0.25W	
CO	R 172	57.11.3242	2.4 kChm	2% 0.25W	
CO	R173	57.11.3242	2.4 kOhm	2% 0.25W	
00	R 174	57.11.3242	2.4 kOhm	2% 0.25W	
CO	R175	57.11.3242	2.4 kOhm	2% O.25W	
CO	R176	57.11.3242		2% 0.25W	
CO	R177	57.11.3242		2% 0.25W	
00	R17E	57.11.3242		2% 0.25W	
00	R179	57.11.3242		2% 0.25W	
00	R18C	57.11.3242		2% 0.25W	
CO	R181	57.11.3242		2% 0.25W	
CO	R 182		not used		
CO	R183		not used		
CO	R184		not used		
CO	R185		not used		
			2411	3 4 5	ton : red ITT
CO	\$ 101	55.15.0003	2 * U 2 * U		ton : red ITT
00	5 102	55.15.0003	2*U		ton : red ITT
00	5 103	55.15.0003 55.15.0003			ton : red ITT
00	S104 S105	55.15.0003			ton : red ITT
C U	3	3341340003	2-0	20 40 000	

Ae.-Index 00 Ae.-Datum 03.05.85 Kopieausgabe 16.44 Uhr am 15.04.86

Visum Ta

	. Pos.Nr.	Teil Nr.	Wert (Menge)	Bezeich	nung	Н	ersteiler
CO	\$106	55.15.0003	2¢∪	3u	Àu	button	: red	177
CO	S107		not used					
00	\$ • • • 108	55.15.0003	2 * U	3 u	Au	button	: red	177
00	w101							
CO	W102							
CO	W103		not used					
CO	h 104		not used					
00	W105		not used					
00	W106							
co	h 107							
CO	W108							
co	K 109		not used not used					
co	h110		not used					
00	W111 h112		not used					
60	w113		not used					
CO	h114		not used					
co	h115		not used					
CO	h116							
CO	K 117							
CO	h 118		not used					
QQ	h 119		not used				_	
00	h • • • 120	1.010.300.64	8-wire	flato) mm	
ÇO	h 121	1.010.300.64	8-wire	flato	able	40) mm	
CO	W122							
00	h • • • 123							
0.0	h • • • 124		not used					
CO	h125		not used					
CO	C 201		not used					
CO	C • • • 202		not used					
CO	C • • • 203		not used					
CO	C204		not used					
0.0	C • • • 205		not used	200	144	. .		
CO	C 206	59.25.3470	47 uF	-20%	167	EL CE		
CO	C • • • 207	59.34.2330	33 pF 22C uF	-20%	6.3V	EL		
00	C 208	59.25.1221 59.25.3470	47 uF	-20%	167	EL		
CO	C 210	59.34.2330	33 pF	204		ČE		
0.0	C 211	59.25.1221	220 UF	-20%	6 • 3 V	ĒL		
CO	C 212	59.34.2330	33 pF			CE		
00	C 213	59.25.1221	22C uF	-20%	6.3V	EL		
00	C214	59.34.2330	33 pF			CE		
CO	C 215	59.25.1221	220 uF	-20%	6 • 3 V	EL		
QQ	C216	59.25.3470	47 uF	-20%	167	EL		
00	C • • • 217		not used					
01	C • • • 218	59.32.4102	1 nF			CE		
00	C 219		not used					
CO	C22C		not used					
00	C • • • 221		not used			PE		
CO	C • • • 222	59.06.0223	22 nF not used			rc		
CO	C 223		not used					
00	C • • • 224		4360					

Ae.-Index 00 Ae.-Datum 03.05.85 Kopieausgabe 16.44 Uhr am 15.04.86

Visum TA

Ind. Pos.Nr	. Teil Nr.	Wert (Menge) Bezeichn	ung Hersteller
CO IC201 CO IC202 CO IC203 CO IC204 CO IC205 CO IC206	50.09.0105 50.05.0243 50.05.0243 50.05.0243 50.05.0243	not used NE5532 NE5534N NE5534N NE5534N NE5534N	dual op am single op am single op am single op am single op am	p. Sig.Ra p. Sig.Ra p. Sig.Ra
00 MP2	53.03.0166 5C.20.2001	5 pcs 2 pcs	IC-socket 8 CLIP ; 2 * TO	92 St
00 P8.2	54.11.2007	2 *8 pin	euroconnector	Bu
CO Q201 CO Q202 CO C203 CO C204	50.03.0516 50.03.0516 50.03.0625 50.03.0625	BC 337 BC 337 BC 327 BC 327	NPN	ed with Q 202 Sie Sie ed with Q 204 Sie Sie
CO R201 CO R203 CO R204 CO R205 CO R206 CO R206 CO R207 CO R209 CO R209 CO R210 CO R211 CO R214 CO R214 CO R215 CO R216 CO R216 CO R217 CO R217 CO R218 CO R219 CO R220 CO R220 CO R220 CO R220 CO R220 CO R221 CO R2220 CO R223 CO R223 CO R223 CO R223 CO R233 CO R233 CO R234 CO R234 CO R234	57.11.4101 57.11.4101 57.11.4101 57.11.4101 57.11.4103 57.11.4103 57.11.4003 57.11.4003 57.11.4003 57.11.4003 57.11.4333 57.11.4333 57.11.4333 57.11.4333 57.11.4333 57.11.4333 57.11.4333 57.11.4333	not used not	5% 0.25W 5% 0.25W 5% 0.25W 5% 0.25W 5% 0.25W 5% 0.25W 5% 0.25W 5% 0.25W 5% 0.25W 5% 0.25W 5% 0.25W 5% 0.25W 5% 0.25W 5% 0.25W 5% 0.25W 5% 0.25W 5% 0.25W 5% 0.25W 5% 0.25W	

WILLI STUDER AG Positions Liste Nr.1.913.178.00 AE. 00 Seite 6

Ae.-Index 00 Ae.-Datum 03.05.85 Kopieausgabe 16.44 Uhr am 15.04.86

Visum TA

Ind	. Pos.Nr.	Teil Nr.	Wert (Menge)	Bezeichn	iung	Hersteller
00	R237	57.11.3242	2.4 kOhm	2% 0.25W		
co	R 238	57.11.3242	2.4 kOhm	2% 0.25W		
CO	R239	57.11.3242	2.4 kOhm	2% 0.25W		
CO	R240	57.11.3242		2% 0.25W		
CO	R 241	57.11.3242	2.4 kOhm	2% 0.25W		
CO	R 242	57.11.3242	2.4 kOhm	2% 0.25W		
00	R243	57.11.3242	2.4 kOhm	2% 0.25W		
00	R Z44	57-11-3242	2.4 kOhm	2% 0.25W		
00	R 245	57.11.3242	2.4 kOhm	2% 0.25W		
00	R 246	57.11.3242		2% 0.25W		
CO	R247		not used			
co	R248		not used			
CO	R 249		not used			
00	R 250		not used			
CO	R 251		not used			
co	R • • • 252	57.11.3242		5% 0.25W		
CO	R253	57.11.3242	2.4 kOhm	5% 0.25W		
••						
00	S201	55.15.0003	2*U	3u Au	button : i	red ITT
co	5202	55.15.0003	2≉∪	3u Au	button : i	red ITT
co	S 203	55.15.0003	2*U	3u Au	button : i	red ITT
00	S204	55.15.0003	2∜U	3u Au	button :	red ITT
CO	\$ 205	55.15.0003	2 * U	3u Au	button :	red ITT
CO	S 206	55.15.0003	2¢U	3u Au	button :	
CO	h201					

CO W...202

CE=Ceramic, CF=Carbon Film, EL=Electrolytic, MF=Metal Film, PE=Polyester, PP=Polypropylen, PS=Polystyrol

MANUFACTURER: Bu=Burndy, Ex=Exar, Fc=Fairchild, Gl=General Instrument HP=Hewlett Packard, IIT=Intermetall, Mot=Motorola, Nat=N [Matsushita], NS=National Semiconductors, Ph=Philips, Ra=Raytheon, Sig=Signetics, Six=Siliconix, St=Studer, II=Texas Instrument

Ende der Positions Liste.

PFL Amplifier 1.913.200

PFL-AMPLIFIER

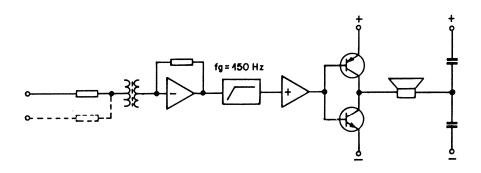
PFL AMPLIFIER

3 Watt Verstärker mit Lautsprecher für Vorhören und Intercom.

3-Watt amplifier with speaker for pre-listening and intercom.

Blockschaltbild:

BLOCK DIAGRAM



TECHNISCHE DATEN

Specifications

Eingangspannung: O dB für	0,3 Watt
Eingangswiderstand	> 10 kOhm
Isolation	500 V
Verstärkung	9 dB
Frequenzgang a) 15 kHz	-0,5 dB
Filter fg	150 Hz / 12 dB / Oct.
Klirrfaktor a) 2 Watt	< 0,5 %
Max. Ausgangsleistung	3 Watt
Speisespannung	- 24 V
Ruhestrom / Strom bei max. Aussteuerung	33 / 220 mA
Fremdspannung	<- 90 dBu

Input voltage: 0 dBu for	0,3 W
Input impedance	> 10 kohm
Insulation rating	500 V
Gain	9 dB
Frequency response at	
15 kHz	- 0,5 dB
Filter fg	150 Hz / 12 dB /oct
Distortion at 2 W	< 0.5 %
Maximum output power	3 W
Supply voltage	-24 V
Current open-circuit/	
fully driven	33/220 mA
Output noise	← −90 dBu

MECHANISCHE DATEN

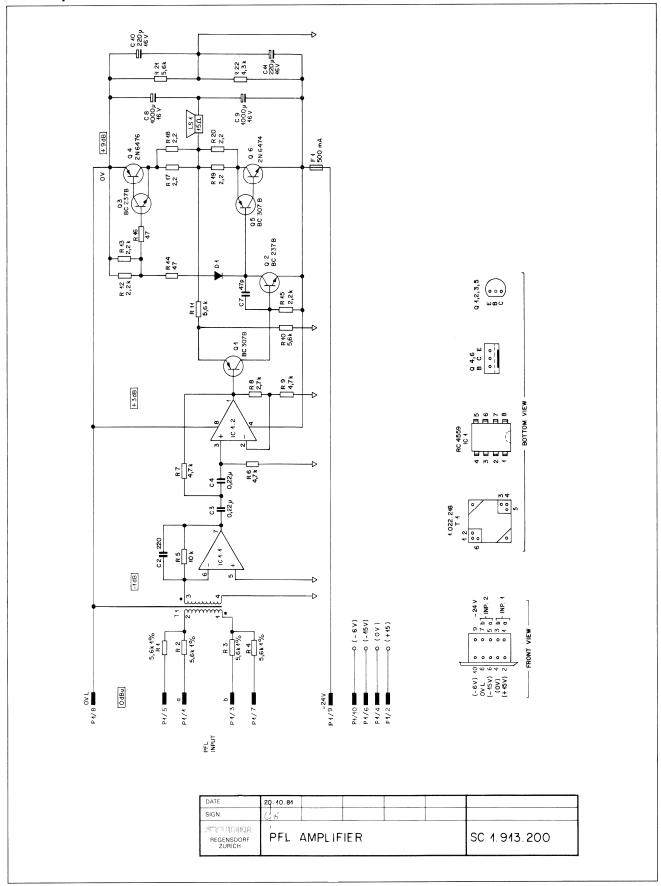
Physical Data

Frontplatte dunkelgrau gespritzt
Abmessung der Frontplatte
Tiefe
Gewicht

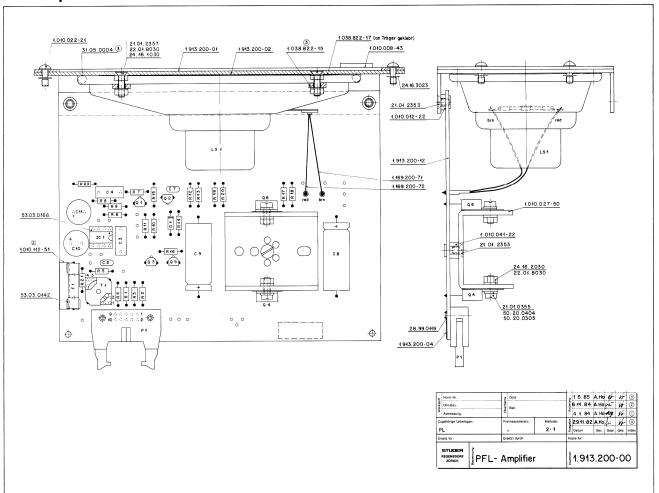
170	Х	80	mm
135	mr	n	
350	gı	•	

Front panel laquered charcoal grey Dimensions of front panel 170 x 80 mm Depth 135 mm Weight 350 g

PFL Amplifier 1.913.200



PFL Amplifier 1.913.200



ND	POS	NO	_		P/	RT	vo		1	VAL	UE	1		SPE	CIFIC	ATIC	ONS/	EQUI	VAL	ENT		MF
	<u>C_</u>	1																				
-	<u>C</u>	2		5.	9.	34	4	221	1	220	2 pt										CEF	?
	<u></u>	3	L	5.	9.	12	.2	224	0	,22	? µ/	7	5%								PE	
	C	4		5.	9,	12	. 2	224	0	2,22	ut	1 .	5%								PE	1
	C	- 5										Τ										
	C	6	Г									T										
	C	7	Г	5	9.	34	. 2	470	1	47	pf										CEI	2
	C	8		5.	9.	25	. 3	102	10	200	MA	-	16V								EL	
	C	9						102													El.	
	c.	10	Т												-	-	-				E	
	c		Г	5	7.	22	. 4	221		220	ut	- 1	6V								EL	
	5		T	50	2.	04	. 0	125	11	144	148	3									51	
	F	1						114					·B									
-		1											DUA							0	PA	Ra
		1						108					3 W									Ph
T			t						T			t							-			Ť
1	Q	1	Т	5	0	03	. 0	515	B	c s	07	Q F	WP			F	2//	pui			5/	ong
	ò	2	Т	50	2	03	-	430	BI	- 2	39 L	2/1	IPN					our			5/	
7	Q Q	2	t	5	2.	12	- 0	1.37	RI	-	27 A	2 1	PN					our			5/	-
	ā	4											WP			owe		7			5/	
	ö	5											NP	,						se		_
-	a	6	-										PN					7			٠,	R
	_		L	-		00		2	2-//			Ľ			_							Ĺ
-	R	1	+	5	7.	11	. 3	56:	-	5.	6 k	.	10%									-
	Ŕ	2	T					560			5 K								-			
	Ŕ	3						562			6 k								-			-
	R	4						561			6 K											1
	R	5						103										_				
	R	6	T					472			7 %		0%									
ND)		DA	TE		1		AMI		1	-/-		1-										
0		- /-			t				10	ER .	_	Cer	om	ic			P,	5	_	Phi	lips	
3	_				†								yes							RC		
2)	-				+		,						ctro								u g/he	on
\sim	6	11.	80		+	d	1		1"	-		_,_		91			,,			.,	,e	
		4.8			t	6/	T.		1													
	_	UE			+	1,	7	- A	WP	7/1	-/.	·P			Τ.		10	-			PAGE	105
=	••	UL	<i>J</i> E.	-	L	/ /	۷	4	1111	41/	12	. ^				. 7	13	. 21	טע	. 00	PAGE	// UF

DI POS NO	PART NO	VALUE		CIFICATIONS/EQUIVALENT	MFR
R 7	57.11.447.	2 4,74	2%		
R 8	57.11.427	2 2,7k	2%		
R 9	57.11.447	2 4,74	2%		
R 10	57.11.356	2 5,6k			
R 11	57.11.356	2 5,64			
R 12	59.11.422				
R 13	57.11.422				
R 14	57.11.447	0 47			
R 15	57.11.422				
R 16	57.11.447	0 47			
R 17	57.11.422	9 2,2			
R 18	57.11.4-22.				
R 19	67.11.4225				
R 20					
R 21		2 5,6 K	15%		
R 22	57.11 343	2 4,3k	1%		
-					
T 1	1.022.218	1:1	Injust	Troto	ST
-					
			<u> </u>		
DA DA	TE NAME	1			
D				ST- ST0	IDER
0					
D					
D					
14.8.	81 Joi				
STUD	ER PFI AI	UPLIFIER		1.913.200.00 r	AGE 2 OF 2

1.913.210/211

KORRELATOR

Der Korrelator zeigt die Phasenkorrelation einer Stereoaufnahme an.

Die Phasenkorrelation ist die gegenseitige Beziehung der Phasen beider Kanäle.

Wenn die Signale beider Kanäle gleichphasig sind, z.B. bei Monoaufnahmen, zeigt das Korrelations-instrument +l an; wenn sie gegenphasig $(\pm\ 180^{\circ})$ sind, zeigt das Instrument -l an. Bei einem Stereoprogramm wird ein Mittelwert von gleich- und gegenphasigen Signalen angezeigt.

Stereoprogramme weisen normalerweise einen positiven Korrelationswert auf, vorzugsweise um + 0,5. Negative Werte zeigen eine Phasenvertauschung im System an.

ANWENDUNGEN, DIE EINEN KORRELATOR ERFORDERN:

Monokompatibilität von Stereoprogrammen

Damit eine stereophone Aufnahme auch monophon abgehört werden kann, muss die Korrelation überwacht werden.

Gegenphasige Anteile führen zu partiellen Auslöschungen.

Tiefe Frequenzen auf Stereo-Schallplatten

Die Abtastfähigkeit eines Abtastsystems ist für vertikale Auslenkung viel geringer als für horizontale Auslenkung.

Gegenphasige Signale mit hohem Pegel und tiefen Frequenzen weisen eine grosse vertikale Auslenkung auf und müssen deshalb vermieden werden.

Modulation von FM-Stereosendern

Die FM-Strecke Sender-Empfänger ist sehr empfindlich auf übermässig hohe Frequenzdifferenz-Signale. Es entstehen dabei unzulässige Verzerrungen.

CORRELATOR

The correlator indicates the phase correlation of a stereo program.

The phase correlation is the mutual relation of the phases on both channels.

If the signals of both channels are in phase, e.g. in a mono production, the correlation instrument indicates +1, if they are phased inversely (± 180), the instrument indicates -1. The correlator always indicates the average of in-phase and antiphase signals of a stereo production.

Stereo programs normally show a positive correlation value, preferably around +0.5. Negative values indicate that the phase in the system is inversed.

APPLICATION WHICH REQUIRE A CORRELATOR

Mono compatibility of stereo programs

To ensure that a stereo recording can also be reproduced in mono mode it is necessary to monitor the correlation.

No phased-inversed components are allowed because they partially cancel during monophonic reproduction.

Low frequencies on stereo records

The tracking capability of a cartridge is much lower for vertical excursion than for horizontal excursion.

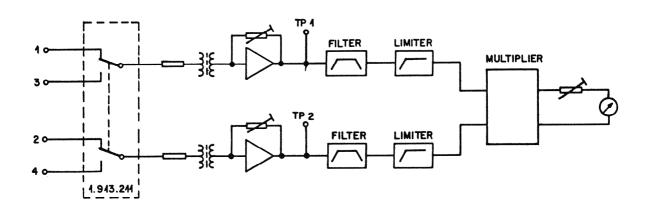
Antiphase signals with high levels and low frequencies result in high vertical excursion and should, therefore, be avoided.

Modulation from FM stereo transmitters

The FM path from the transmitter to the receiver is very sensitive to excessively high frequency-difference signals. They produce inacceptable distortion.

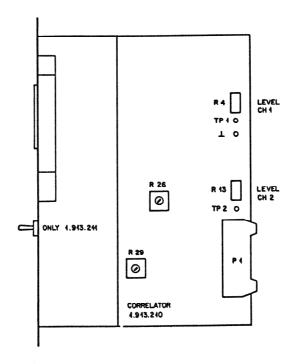
Blockschaltbild

Block Diagram



Abgleich

Calibration

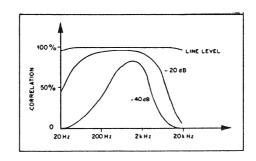


 An beiden Eingängen wird ein gleichphasiges 1 kHz-Signal mit Leitungspegel eingespiesen.
 R4 bzw. R13 so einstellen, dass an den Messpunkten TP1 bzw. TP2 ein Pegel von 100 mV AC

gegen ⊥ (Masse) erscheint.

- Eingangspegel um 50 dB verringern. KO an den Ausgang 6 oder 9 von IC3 gegen Masse ⊥ anschliessen. Die Amplituden beider Halbwellen mit R29 auf gleiche Höhe einstellen.
- Eingangspegel wieder auf Leitungspegel einstellen. Mit R26 den Zeiger des Anzeigeinstrumentes auf +1 einstellen.
- 4. Einen der beiden Eingänge umpolen. Das Messinstrument soll -l anzeigen.
- 5. Anzeigen gemäss Fig A kontrollieren.

- Feed both inputs with an in-phase signal (1 kHz, line level).
 Adjust R4 and R13 in such a manner that 100 mV AC appear at both test points TP1 or TP2, against ground.
- Reduce the input level by 50 dB. Connect oscilloscope to pin 6 or 9 of IC3 to ground. With R29 adjust the amplitudes of both halfwaves to equal height.
- Restore input level to line level. With R26 adjust the pointer of the meter to +1.
- Reverse the polarity of one of the inputs. The meter should indicate -1.
- 5. Check meter readings according to Fig. A.



EINGANG	30 Hz	1 kHz	15 kHz
Leitungspegel = A	0,95	1	0,95
A + 20 dB A - 20 dB	~1 0,6	1 ~1	~1 0,5

INPUT	30 Hz	1 kHz	15 kHz
Line level = A	0,95	1	0,95
A + 20 dB A - 20 dB	~1 0,6	1 ~1	~1 0,5

TECHNISCHE DATEN

Eingang

symmetrisch und erdfrei

Eingangsimpedanz 20 Hz ... 20 kHz: >10 kOhm Eingangspegel, einstellbar: +6 ... +15 dBu

Filter

Hochpass 6 dB/Oktave: fu. ca. 340 Hz Tiefpass 12 dB/Oktave: fo. ca. 3,4 kHz

Ausgang

Ausgangstrom für Instrumente, einstellbar + 300 μA

Temperatureinfluss

Fehler bei 0° C ... 50° C, bezüglich Raumtemperatur: +3 ... -1 %

Stromaufnahme bei + 15 V: ca. 15 mA

Mechanische Daten

Frontplatte dunkelgrau gespritzt 170 x 180 mm Abmessung Frontplatte Tiefe 135 mm 390 gr Gewicht

SPECIFICATIONS

Input

Balanced and floating

Input impedance 20 Hz ... 20 kHz: 10 kOhm Input level, variable: + 6 ... + 15 dBu

High-pass 6 dB/octave: f_1 approx. 340 Hz Low-pass 12 dB/octave: f_u . approx. 3.4 kHz

Output

Output current for instruments, variable + 300 uA.

Influence of temperature

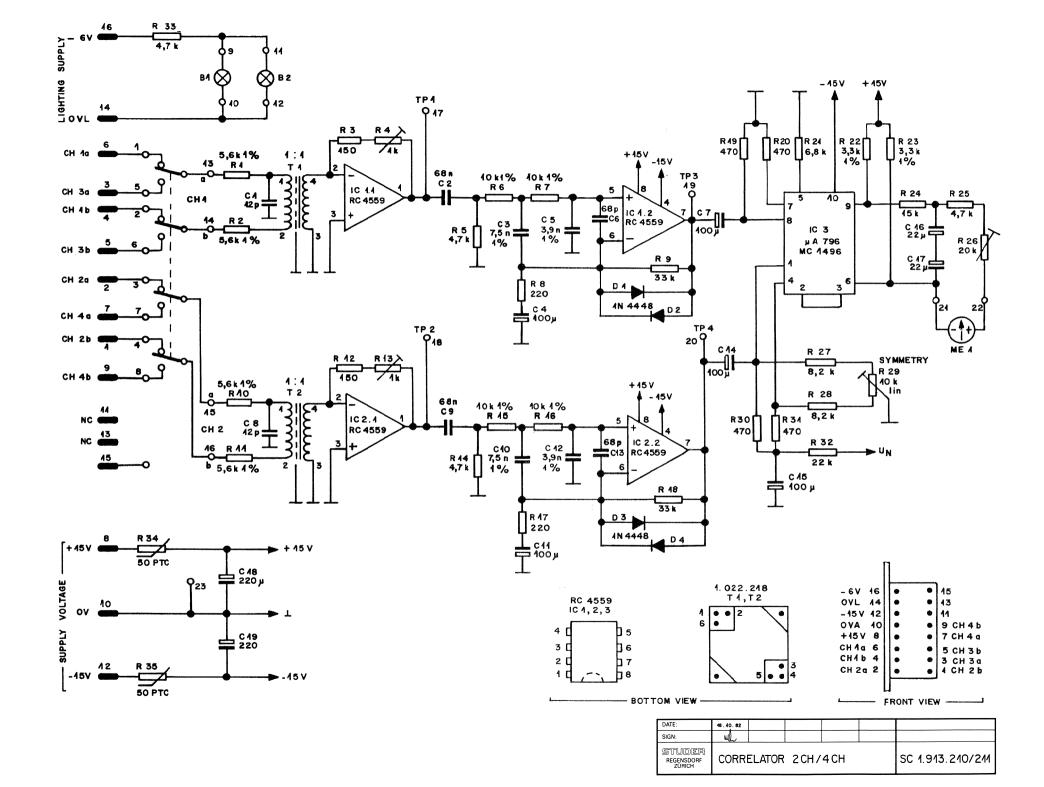
Error at 0 C \dots 50 C, relative to room temperature: + 3 \dots - 1 %.

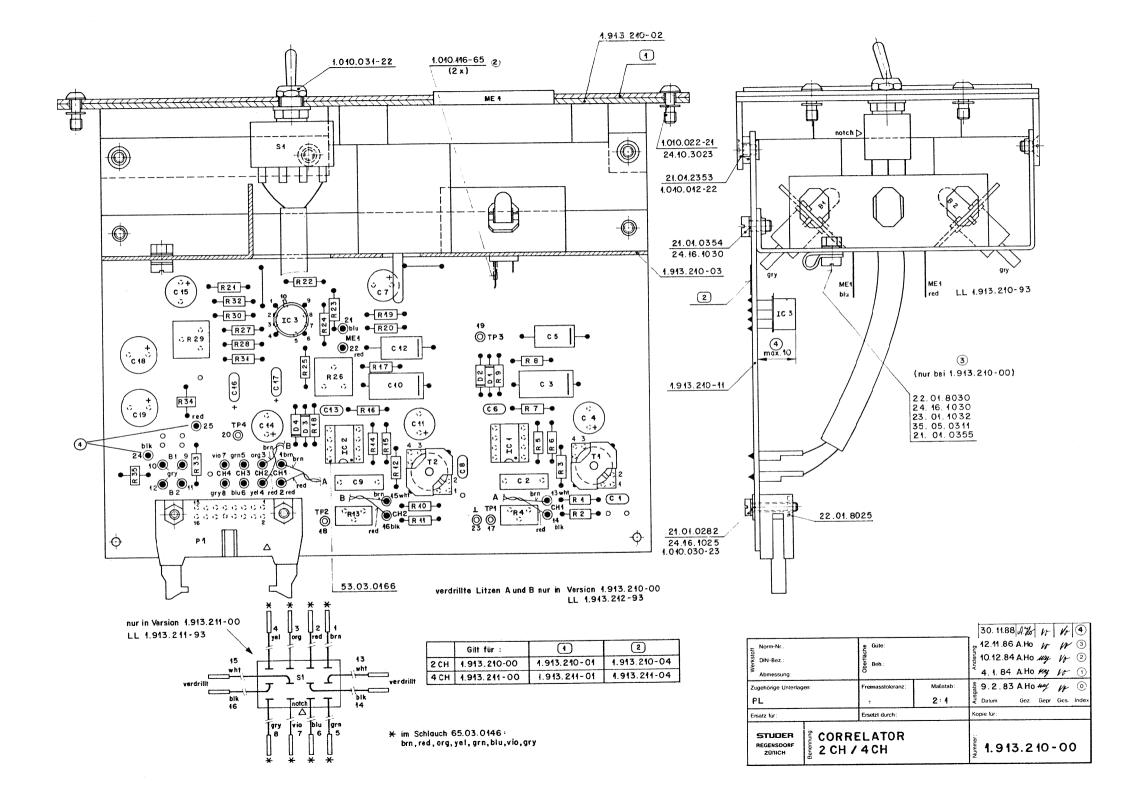
Connected load at \pm 15 V: approx. 15 mA

Physical data

Front panel laquered charcoal grey

Dimensions of front panel 170 x 180 mm Depth 135 mm Weight 390 g





IND POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR	IND POS NO
CA	59.34.4420	12pF	5%		R/I
C2	59.02.5683	68nF	5%		R2
C 3	59,42,7752	7,5nF	1%		R3
C 4	59.22.5404	100 pF	16V		R4
6	59 12,7392	3,9nF	Λ%		R5
C 5	59.34.4680	68pF	5%		R6
(7	53, 22,5404	100uF	16V		R7
1 6 8	59.34 4/20	12 pF	5%		R8
(9	53,02 5683	68nF	5%		P.9
[040]	7:40.9162	7,5nF	1 %		R40
0.23	59.22,5404	100 pt F	A6V		P.44
C 42	59.427392	3,9nF	1%		R12
C43	59.34.4680	68pF	5%		R43
C14	59.22.5404	100,UF	16V		R14
C15	59.22 5104	100mF	16V		R15
.C16	59.26.4220	22,uF	10V		R16
C17	59.26.4220	22,uF	10V		R47
C18	59,22,4224	220,uF	16V		R18
C 19	59.22.4224	220µF	16V		R19
					R20
					R21
DA	50.04.0125	104448			R22
D2	50.04.0125	1N4448			R23
D3	5 0.04.0125	AN4448			R24
D4	50.04.0125	1N4448			R25
					R26
IC'A	50,09.0407	4559		Ra,TI	R27
1C2	50.09.0407	4559			R28
103	50,05,0122	MC1496 G	MA796 HC	M, F	R29
					R30

1 1	K1Z	٦٢ ,	77.4721	1100	
П	R43	58.	01.7102	Лk	TRIM-POTM.
	R14	57.	11.4472	4,7 k	
	R15	57,	11.3103	10k	Λ%
	R16	57.	11.3103	10 K	Α%
	R47	57.	11.4221	220	
	R18	57	.44.4333	33k	·
	R19	57.	.11.4471	470	
	R20	57.	11.4471	470	
	R21	57.	11.4682	6,8k	
	R22	57	11,3332	3,3k	Λ%-
	R23	57.	11.3332	3,3k	Α%
	R24	57	11.4153	45 k	
	R25	57	11.4472	4,7k	
	R26	58	.01.8203	20k	TRIM-POTM.
	R27	57	.11.4822	8,2k	
	R28	57	,11,4822	8,2k	
	R29	58	,04,8403	10k	TRIM-POTM.
	R30	57	.11.4471	470	
-	DA	TE	NAME	1	
-					
-				_	
				Jalso valid	for correlator 4CH 1.913.211
0	20-8	3-81	1129		
		R43 R44 R45 R46 R47 R48 R49 R20 R21 R22 R23 R24 R25 R26 R27 R28 R29 R30	R43 58. R44 57. R46 57. R46 57. R48 57. R48 57. R49 57. R20 57. R21 57. R22 57. R23 57. R24 57. R25 58. R27 57. R28 57. R29 58. R29 58. R20 57. R20 58. R21 57. R20 58. R21 57. R22 57. R23 57. R24 57. R25 58. R27 57. R28 57. R29 58. R30 57. IND DATE	R43 58.04.7402 R44 57.44.4472 R45 57.44.3403 R46 57.44.3403 R46 57.44.333 R49 57.44.4474 R20 57.44.4474 R20 57.44.4682 R22 57.44.4682 R22 57.44.3332 R23 57.44.3332 R24 57.44.4453 R25 57.44.4453 R25 57.44.4452 R26 58.04.8203 R27 57.44.4822 R28 57.44.4822 R29 58.04.8403 R30 57.44.4474	RA3 58.0A.7402 Ak RA4 57.AA.4472 4;7k RA5 57.AA.3403 A0 k RA6 57.AA.3403 A0 k RA7 57.AA.422A 220 RA8 57.AA.4333 33k RA9 57.AA.447A 470 R20 57.AA.447A 470 R21 57.AA.4682 6,8k R22 57.AA.3332 3,3k R23 57.AA.3332 3,3k R24 57.AA.4453 45k R25 57.AA.4472 4,7k R26 58.0A.8203 20k R27 57.AA.4822 8,2k R29 58.0A.8403 40k R30 57.AA.4474 470 IND DATE NAME ④ 3 ② 0 □ also valid

CORRELATOR 2CH 1.913.210

VALUE

5,6 k

5,6 k

1k

47k

10 k

10 k

33k

5,6 k

5,6k

150

220

150

1%

1%

1%

1%

1%

1%

TRIM-POTM.

PART NO 57.44.3562

57.44.3562

57.44.4454

58,04.7402

57.44.4472

57,11.3103

57.11.3103

57.44.4224

57,11.4333

57,44.3562

57.44.3562

57.44.4454

STUDER

SPECIFICATIONS/EQUIVALENT

MFR

PAGE 2 OF 3

IND	DATE	NAME	1
4			F Fairchild TI Texas Instruments
3			M Motorola
2			Ra Raytheon
1			also valid for correlator 4CH 1.913.211
0	20-8-81	ny	
STUDER		COR	RELATOR 2CH 1.913,210 PAGE 1 OF 3

IND	POS NO		PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	R31	57	.11.4471	470		
	R32	57	11.4223	22 k		
	R33	57	.11.4479	47		
	R34	57	.99,0206	50	PTC	
	R35	57	.99.0206	50	PTC	
	SA	55	.01.0115	4x ON-ON	only 1.913.211	
	TA	1.0	22.248	1:1	INPUT TRAFO	STUDER
	T2	1.0	22.218	4:4	INPUT TRAFO	STUDER
Г						
	ВI	54	.02.0144	6 V, 30mA	Lamp	
	B2	54	.02.0144	6V,30mA	Lamp	
	MEA	1.9	143,004.03		CorrMeter	
	РЛ	54	1.14.2012		Connector, 16pins	
Г	XIC.	53	3.03.0166		IC-Socket, 8pins	
\vdash						
T						

\vdash			***************************************			_
-						_
1		l		<u> </u>		_
\vdash		 				
-		l		<u> </u>		
IND	l DA	I	NAME	1	1	
1110	- DA	· -	INAME	 		

	L		
סאון	DATE	NAME	
(4)			
3			
2			
0			also valid for correlator 4CH 1.913.211
0	20-8-81	ny	
STUDER		COR	RELATOR 2CH 1.913.210 PAGE 3 OF 3

PEAK PROGRAM METER

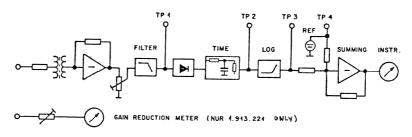
PEAK PROGRAM METER

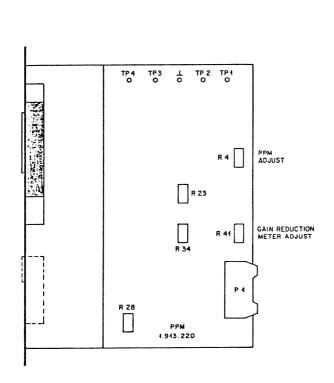
Aussteuerungsmesser mit symmetrisch, erdfreiem Eingang. Dynamisches Verhalten gemäss IEC / DIN Normen.

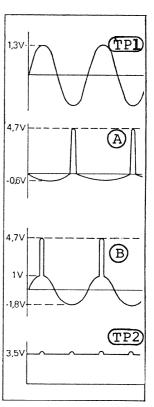
Level indicator with balanced and floating input. Dynamic response according to IEC / DIN standards.

Blockschaltbild

Block Diagram







Abgleich

- 1) Leitungspegel + 6 ... + 15 dB l kHz am Eingang.
- 2) + 3,5 V an TP2 mit R4 (Pegel PPM)
- 3) O dB am Instrument mit R28
- 4) 30 dB am Instrument mit R34
- 5) 40 dB am Instrument mit R23

Calibration

- 1) Line level +6 ... +15 dB l kHz at input 2) +3.5 V at TP2, adjust with R4 (level PPM) 3) 0 dB at instrument adjust with R28
- -30 dB at instrument adjust with R34
- 5) -40 dB at instrument adjust with R23

Die mechanische Nullstellung des Messwerkes liegt bei Referenzanzeige O dB. Für Pegel, deren Anzeige O ... + 6 dB ergibt, wechselt die Polarität der Ausgangsspannung am Verstärker 4.2. The mechanical zero position of the instrument corresponds to the reference indication 0 dB. For levels which give a deflection of 0 ... +6 dB on the scale, the amplifier 4.2 changes the polarity of the output voltage.

TECHNISCHE DATEN

Eingangsempfindlichkeit für Referenzanzeige (O dB): + 6 dBu ... + 15 dBu Eingangsimpedanz > 10 kOhm

Anzeigebereich: - 40 dB ... + 6 dB

Genauigkeit bei 20° C, 1 kHz - 40 dB ... + 6 dB: \pm 0,5 dB

Frequenzgang bei Referenzanzeige 0° C ... 50° C, 31,5 Hz ... 15 kHz: \pm 0,5 dB

Temperatureinfluss bei Referenzanzeige, 1 kHz, 0° C ... 50° C: < Fehler 0,5 dB

Dynamisches Verhalten:

Ueberschwingen: ≤1 dB

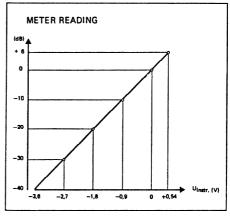
Ansprechzeit auf -1 dB \pm 0,5 dB: 10 ms -4 dB \pm 1 dB: 3 ms

Rücklaufzeit 0 ... - 20 dB: 1,7 s \pm 0,3 s

Stromaufnahme bei + 15 V: Ca 15 mA

MECHANISCHE DATEN

Frontplatte dunkelgrau gespritzt Abmessungen Frontplatte 170 x 80 mm Tiefe 135 mm Gewicht 360 gr



SPECIFICATIONS

Input sensitivity for reference indication (0 dB): +6 dBu ... +15 dBu
Input impedance >10 kOhm

Indicating range -40 dB ... +6 dB

Accuracy at 20° C, 1 kHz -40 dB ... +6 dB: + 0.5 dB

Frequency response at reference indication 0°C ... 50°C 31.5 Hz ... 15 kHz: \pm 0.5 dB

Influence of temperature at reference indication,
l kHz 0°C ... 50°c: error 0.5 dB

Dynamic response:

Overswing: 1 dB

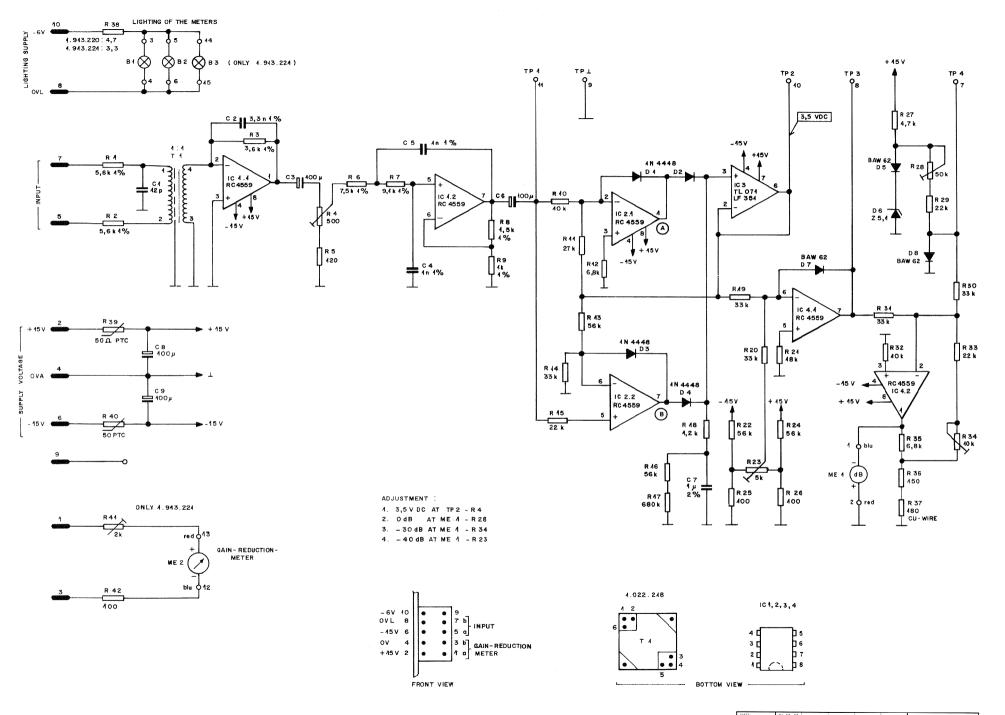
Attack time to -1 dB \pm 0.5 dB: 10 ms -4 dB \pm 1 dB: 3 ms

Return time 0 ... -20 dB: 1.7 s \pm 0.3 s

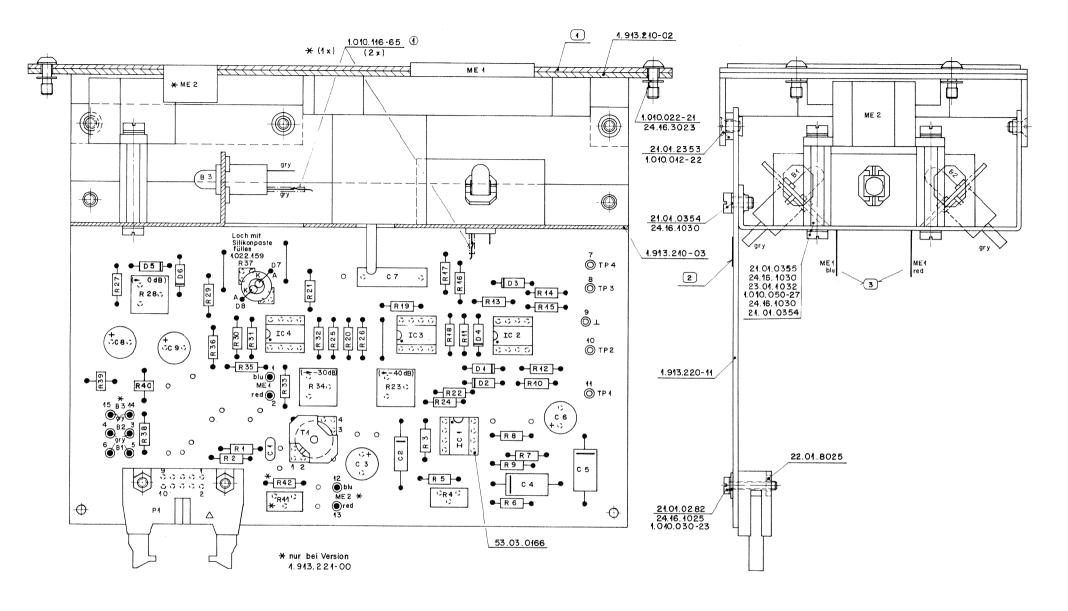
Connected load at \pm 15 V: approx. 15 mA

PHYSICAL DATA

Front panel laquered charcoal grey Dimensions of front panel 170 \times 80 mm Depth 135 mm Weight 360 g



SIGN:	21.10.82 MM							-
REGENSIONE ZURICH		PROGR	AMME	METER	₹	SC	1.913.220/22	1



Gültig für :	1	2	3
1.913.220-00	1.913.210-01	1.913.220-04	1.913.210-93
1. 913.221-00	1.913.221-01	1.913.221-04	1.913. 221 - 93

Norm-Nr DIN-Bez Abmessung		e Gute Beh.:		3) 3) 3) 4) 4) 4) 4) 4) 4) 4) 4) 4) 4) 4) 4) 4)
Zugehorige Unterlag	jen,	Freimasstoleranz.	Maßstab 2 : 1	ag 41. 2. 83 A.Ho My Va (1) Part Datum Gez Gepr Gcs Index
Ersatz für:		Ersetzt durch:		Kopie fur
STUDER REGENSDORF ZÜRICH	Peak F	orogramm	e Meter	1.913.220-00

IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	C1	59.34.1120	12pF	5%	
	C2	59,42,7332	3,3nF	1%	
	C.3	59.22.5404	100µF	16V	
	C4	59.42.9402	1 nF	1%	
	C5	59,42,9402	1 nF	Λ%	
	C6	59.22.5101	100mF	16V	
	C7	59.99.0508	1 pcF	2%	
	CB	59.22.5404	100,uF	A6V	
	C9	59.22.5404	100,uF	16V	
				V / 200 / 20	
	DΛ	50.04.0125	1N4448	- 11 - 12 - 12 - 12 - 12 - 12 - 12 - 12	any
	D2	50.04.0/25	/N4448	- 1	any
	D3	50.04.0125	1114448		any
	D4	50,04,0125	1N 4448		any
	D5	50.04.0132	BAW 62	only	РН
	D6	50.04.1/1/2	ZPD 5,1	5,1Vat 5mA, 5%	ITT
	D7	50.04.0/32	BAW62	only	PH
	D8	50.04.0/32	BAW62	only	PH
					<u> </u>
	-	***************************************			
	IC4	50,09,0107	RC4559NB		RA,TI
	IC2	5 0.09.04 07	RC4559NB		RA, TI
	1C3	50.09.0403	TL 07/1CP	LF351N	TI, N
	1C4	50,09,0107	RC 4559NB		RA, TI
					11.4
	ME /	1.913.001.01		Peak Programme Meler	
	ME2	1.169, 900,02		Gain-Reduction-Meter (only 1.913.221)	

IND		NAME				
4			PH Philips	N	National	Sem.
3			RA Raytheon			
2			TI Texas Instr.			
0			also valid for PPN	y with		•
0	20-8-81	nuy	gain reduction meter 1.913,221			
2	STUDER	PEAK PRO	GRAMME METER	1.913	3.220	PAGE / OF 3

IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
L	R1	57,44,3562	5,6k	1%	
	R 2	57,11.3562	5,6k	1%	
L	R3	57.11.3362	3,6k	1%	
	R 4	58.01.7501	500	TRIM	
	R 5	57,11.4121	120		
	R6	57.44.3752	7,5k	1%	
	R7	57.11.3912	9,1k	4%	
	R 8	57.44.3452	1,5k	1%	
	R 9	57.11.3102	Λk	1%	
	R/10	57,11.4103	10k		
	RM	57.11.4273	27k		
	R 12	57.44.4682	6,8k		
	R 13	57.11.4563	56k		
	R 14	57.11.4333	33k		
	R 15	57,11.4223	22k		
	R16	57,11,4563	56k		
	R 17	57.11.4684	680k	2%	
	R 18	57,11,4122	1,2k		
	R 19	57.11.4333	33 k		
	R20	57.M.4333	33 k		
	R21	57.11.4183	18 k		
	R 22	57.11.4563	56k		
	R 23	58.01.8502	5k	TRIM	
	R 24	57.11.4563	56k		
	R25	57.44.4404	100		
	R 26	57.71.4101	/100		
	R 27	57.11.4472	4,7 k		
	R28	58.01.8503	50k	TRIM	
	R29	57,11,4223	22k		
	R30	57.11.4333	33k		

					1 1
IND	DATE	NAME			
4					
3					
2					
1					
0	20-8-81	ny			
5	STUDER	PEAK PRO	GRAMME METER	1.913.220	PAGE 2 OF 3

ND POS NO		VALUE	SPECIFICATIONS/EQUIVALENT	MFR
R31	57,11.4333	33 k		
R 32	57.11.4103	10 k		
R 33	57.11.4223	22k		
R34	58.01.8103	10 k	TRIM	
R35	57.11.4682	6,8k		
R36	57.11.4151	150		
R 37	1,022,159,00	180	Cu-Wire	STUDE
R38	57,11.4479	47Ω	1.943.224 : 3 ₁ 3.D.	3.002
R 39	57.99.0206	50Ω	PTC	
R 40	57,99,0206	50Ω	PTC	
R41	58.04.7202	2k	TRIM only 1.913.221	
P42	57,11.4101	100	only 1.913.221	
			1000	
TA	1.022.218.00	1:1	Input Trafo	STUDE
				5,000
ВЛ	54.02.0144	6V,30mA	Lamp	
B2	51.02.0144	6V, 30 mA	Lamp	
B3	54.02.0444	6V, 30mA	Lamp	
P1	54.14.2011	,	Connector	
				_
XIC	53.03.0466		IC-Socket 8pins	
			э эт эт эриз	
				-
				_
† — †				
†				
D DAT	E I NAME	L		
5	NAME			
-				

1,913.220

PAGE 3 OF 3

0 20-8-81

STUDER PEAK PROGRAMME METER

STUDER

VU-METER

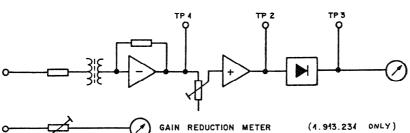
VU-Meter mit symmetrisch, erdfreiem und hochohmigem Eingang. Dynamische Daten gemäss IEC.

VU-Meter

Block diagram

VU-meter with balanced, floating and high-impedance input. Dynamic response according to IEC.

Blockschaltbild



0 dBu ... + 10 dBu

Einmessen:

TP1: Variabel (0,1 V ... 0,35 Veff)

TP2: 1 Veff

TP3: - 3,6 V p Vollweg-Gleichrichtung

Mit R 4 kann die Referenzanzeige (0 VU) für Eingangssignale zwischen 0 dBu und + 10 dBu eingestellt werden.

Calibration

TP1: Variable (0.1 V ... 0.35 Veff)

TP2: 1 Veff

TP3: -3.6V p full-wave rectification

The reference indication (0 VU) for input signals between 0 dBu and +10 dBu can be adjusted with R4.

(4. 943. 234 ONLY) TP 4 O R4 VU METER ADJUST O TP 2 GAIN REDUCTION METER ADJUST (1.943. 234 only) P1 VU - METER 4. 943. 230

TECHNISCHE DATEN

Eingangsempfindlichkeit für

Referenzanzeige (0 VU)

Eingangsimpedanz Anzeigebereich	> 10 kOhm - 20 VU + 3 VU
Genauigkeit bei 20°C, 1 kHz, -10 VU +3 VU	<u>+</u> 0,5 VU
Frequenzgang für Referenzanzeige 0°C 50°C, 31,5 Hz 15 kHz	<u>+</u> 0,5 VU
Ansprechzeit auf - 1 VU	207 ms <u>+</u> 30 ms
Speisung	+ 15 V 10 mA - 15 V 10 mA - 6 V 60 mA (90 mA)

SPECIFICATIONS

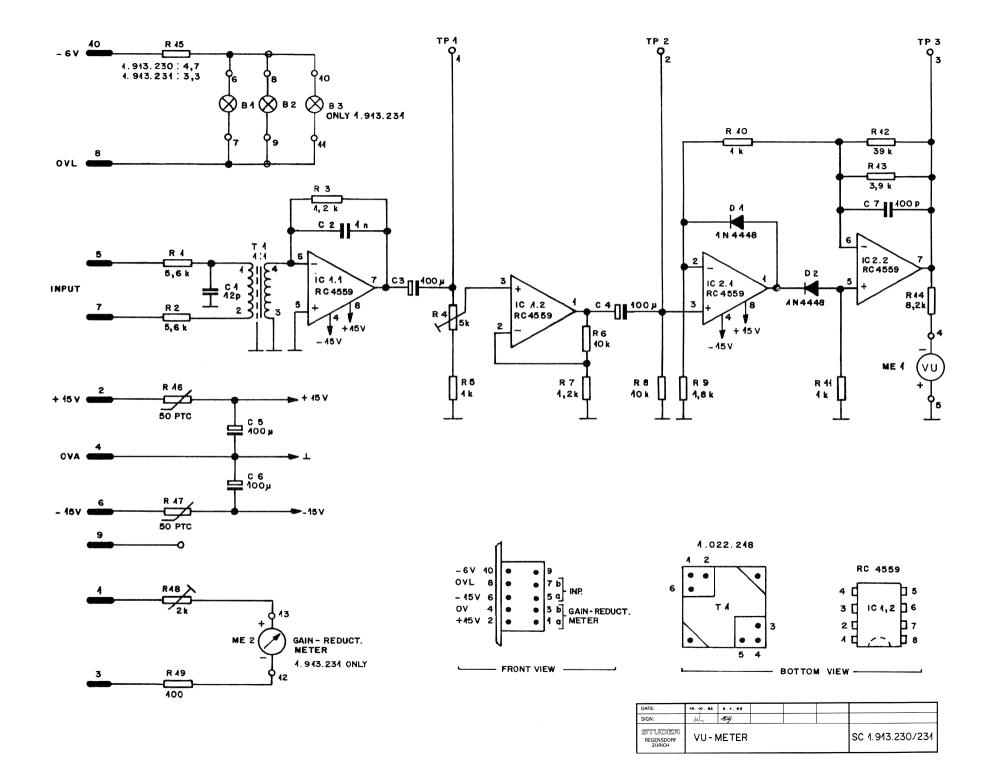
Input sensitivity for reference indication (0 VU) 0 dBu ... +10 dBu Input impedance >10 k0hm Indicating range -20 VU ... + 3 VU Accuracy at 20°C, 1 kHz, -10 VU ... +3 VU ±0.5 VU Frequency response for reference 0°C ... 50°C, 31.5 Hz ... 15 kHz ±0.5 VU Attack time to -1 VU 207 ms +30 ms Supply +15 V 10mA -15 · V 10mA - 6 V 60mA (90mA)

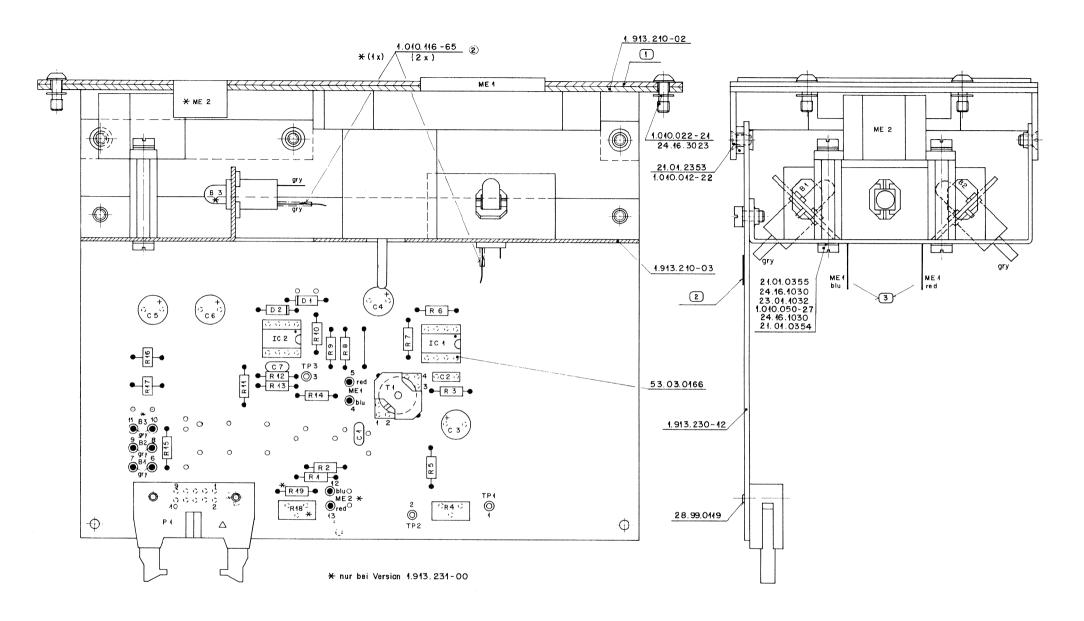
MECHANISCHE DATEN

Frontplatte	dunkelgrau gespritzt		
Abmessungen	Frontplatte	170	x 80 mm
Tiefe		135	mm
Gewicht		310	gr

PHYSICAL DATA

Front panel sprayed charcoal grey
Dimension of front panel 170 x 80mm
Depth 135mm
Weight 310 g





Gültig für:	1	2	3
1. 913 . 230-00	1.913.210-01	1.913.230-04	1.913.210-93
4.943 . 231-00	1.913.221-01	1.913.231-04	1.913.221-93

Werkstoff	Norm-Nr.: DIN-Bez.: Abmessung:		Oberfläche	Güte: Beh.:		Änderung	10.12.84 4. 1. 84	A.Ho A.Ho		vr vo	3 2
Zu P	gehörige Unterlag L	en:		imasstoleranz:	Маßstab: 2 : 1	Ausgabe	11.2.83 Datum	A.Ho Gez.	нц Gepr.	Vr Ges.	0 Index
Ersatz für:		Ersetzt durch:		Kopie für:							
STLIDER REGENSDORF ZÜRICH VU - Meter			Nummer:	1.913	.23	30-	-00	o			

INDI POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
C1	59.3 4.4 1 2 0	12 pF	5%	
C2	59,06,0102	1 nF	10%	
C3_	59.22.5404	100 MF	≥ 16V	-
C4	59.22.5104	عبر 100k	≥ 16V	
1.5	59.22,5404	100 MF	≥ 16V	
(6	59.22 5 - 0.1	100 MF	≥ 16V	
C7	59.34.41.01	100 pF	5%	
DA	50.04.0125	1N4448		any
DS	50.04.0125	4N4448		any
				_
IC /I	50,09,0107	RC4559 NB	Dual OP AMP	Ra, Ti
102	50.09.0407	RC 4559 NB	DUAL OP AMP	Ra,TI
. RA	E3.440C/D		J.A.	
k2	57.44.3562 57.44.3562	5,6 k	/%	
R3	57,44,4422		1%	`
R4	58.04.75.02	1,2k 5k	7000	
85	57,11,4102	1 / k	TRIM-POTM.	
R6	57,11,4102	10k		
R7	57,11,4122	1/2 k		
R8	57,44,4403	10 k		
R9	57.11.41.82	1/8 k		
R10	57,11,41,02	1 / k		
I RAA	57.11.41.02	1 k		
R 12	57.41.4393	39 k		
R13	57.11.4392	3,9k		
R 14	57,41,4822	8,2k		
NDI DAT		1 0/~		

IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	I MFR
L	R15	57,11,4479	4,7 52	1,913.231 : 3,3. Q (57,111,4339)	
L	R16	57,99,0206	50	PTC PHILIPS 2,322,664 94002	
L	R17	57.99.0206	50	PTC PHILIPS 2,322.664.94002	
	R18	58.01.7202	2k	Trim-Pot. (only 1,913,231)	
	R19	57.11.4101	100	(only 1,913,231)	
	TA	1,022.218.00	N:N	Input Trafo	
	Вл	54.02,0444	6V,30mA	Lamp	
	B2	51.02.0144	6V,30mA	Lamp	
	MEA	1.913,001.02		VU-Meter	
	ME2	1.169.900.02		Gain-Reduction Meter (only 1,913.2	31)
	P1	54,14.2011		Connector 10 pins	y
	XIC	53,03,0166		IC-Socket 8 pins DIP	
	в3	51.02.0144	6V, 30mA	Lamp (only 1.913,231)	
		·			
П					
П					
П					

IND	DATE	NAME			1
(4)			Ra Raytheon		
(a)(b)(c)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)(d)<l< td=""><td></td><td></td><td>TI Texas Instr.</td><td></td><td></td></l<>			TI Texas Instr.		
2			also valid for VU-met	ter with	
0			gain reduction meter 1,913,231		
0	20-8-81	NY			
STUDER VU-		VU-M	ETER	1.913.230	PAGE 1 OF 2

-					l l
IND	DATE	NAME			
(4)					
3					
2			also valid for VU-n	neter with	
0			gain reduction meter 1.913.221		
0	20-8-81	NY			
STUDER VU-N		VU-1	NETER	1,913,230	PAGE 2 OF 2

SECTION 7: Modular Sub Cards

1.914 ...

INHALT

MSC -	- Mother Board	1.915.770.00
*	Line Output Amplifier	1.914.501.00
*	High Level Input Amplifier	
*	Loudspeaker Amplifier	1.914.505.00
*	Microphone Pre-Amp. for dynamic mic	1.914.506.81
*	Microphone Pre-Amp. for electret	1.914.507.81
*	Voltage contr. amp., balanced in-/output	1.914.515.00
*	Voltage controlled Amplifiers (VCA)	
*	Limiter Voltage Proc.	1.914.519.81
*	1900 Hz Signal Generator + Decoder	1.914.520.00522.00
*	Relay Sub-Card	1.914.523.00526.00
*	VCA, 3 kontr. Eingänge	1.914.528.00
*	(Breadboarding Card) = Experimental Board	1.914.529.00
*	Zero-Ohm-Input Amp. with PFL	1.914.530.00
*	High Level Input Amp. with PFL	1.914.531.00
*	Flip-Flop	
*	90° Filter stereo/mono	
*	Dual Vox Detector	1.914.534.00
*	Tel Trafo Unit	1.914.536.00
*	Mic Amp.with Limiter (TB)	1.914.539.00
*	VCA control voltage IF	1.914.540.00

^{*} Diese Beschreibungen werden kundenspezifisch bestückt.

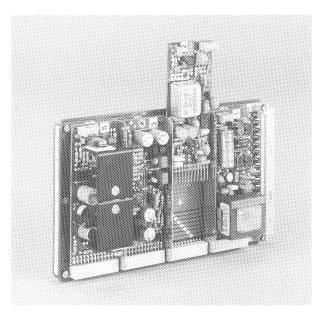
^{*} These descriptions are supplied according to the customers requirements.

MSC SYSTEM

MSC System 1.914....

Die Planung professioneller Tonstudioanlagen erfordert Komponenten von höchster Flexibilität. STUDER Ingenieure haben ein völlig neuartiges Konzept entwickelt.

Die Europakarte ist bezüglich Grösse und Anschlüsse eine verbreitete Platinennorm. Viele Schaltungen nutzen jedoch nur einen kleinen Teil dieser Karte aus. Daraus entstand die Idee, die Europakarte nur als Träger für kleinere Schaltungen einzusetzen, die frei kombiniert werden können. Die so entstandene Trägerkarte (Mother Board) kann vier Subkarten (Modular Sub Cards) aufnehmen.



Die modularen Subkarten MSC sind in reicher Vielfalt lieferbar:

- Mikrophon Vorverstärker
- Lautsprecher Verstärker
- OΩ-Verstärker
- Limiter
- VCA
- VCA-Steuerspannungsinterface
- Relaiskarten
- Hochpegel-Eingangsverstärker
- Leitungsausgangs-Verstärker
- Signalgenerator / Decoder 1900Hz
- 90° Filter Stereo / Mono
- Flip-Flop
- Experimentierkarte

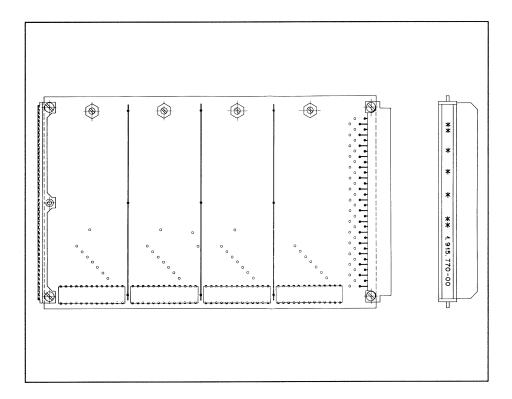
Bei der Projektierung können spezifische Systemanforderungen im Baukastensystem umgesetzt werden. Zur Verfügung stehen sowohl ein Sortiment an Standard-Europakarten als auch das flexible MSC-System, das den Aufbau individueller Europakarten ermöglicht.

Eine detailierte Beschreibung der Europakarten und MSC gibt die Broschüre "STUDER Audio Components" (Best. Nr. 10.26.0104).

MSC - Mother Board

Die 'Modular Sub Cards' werden auf einer Trägerplatine frei kombiniert. Dieses 'Mother Board' im Europakartenformat gliedert sich nahtlos ins Programm der STUDER Audiokomponenten ein.

Die Trägerplatine kann vier Subkarten über je einen 13-poligen Winkelstecker und eine Befestigungsschraube aufnehmen. Alle vier Steckplätze sind über gedruckte Leiterbahnen mit dem 32-poligen Printstecker verbunden. Sechs gemeinsame Verbindungen liefern die Versorgungsspannungen, weitere sechs Leitungen stehen für jede Subkarte individuell zur Verfügung. Die restlichen beiden Bahnen bilden je eine getrennte Busverbindung zu den Steckplätzen 1 + 2 bzw. 3 + 4.



Abmessungen

Europakartenformat

100 x 160mm

Anschlüsse

1x EUROstecker 32-polig; DIN 41612;

4x CIS-Stecker 13-polig; (for MSC)

Bestellinformation

MSC Mother Board

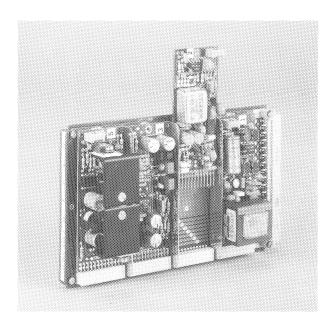
1.915.770.00

MSC SYSTEM

MSC System 1.914....

To provide highest possible flexibility for the designer of professional sound systems, STUDER engineers have pursued a completely new concept.

The EURO-card is a convenient circuit board as far as its size and its plugin features are concerned, however, often it offers space in excess to that required for a particular circuit. This has triggered the idea to utilize the EURO-card simply as a carrier of smaller circuit boards that can be plugged onto the EURO-card, converting it into a master board that holds 4 small printed circuits – the "Modular Sub-Card" (MSC).



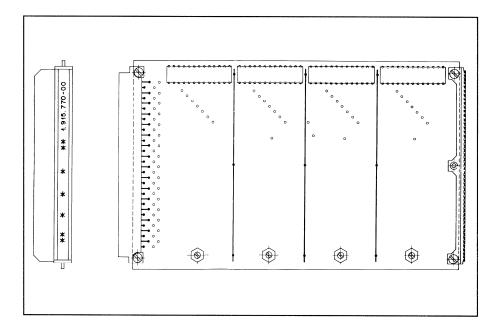
A great variety of different circuits is available in form of MSC's such as

- Microphone preamplifier
- Speaker amplifier
- O-Ohm amplifier
- Limiter
- Voltage controlled amplifier
- VCA control voltage interface
- Relay sub card
- High level input amplifier
- Line output amplifier
- Signal generator / decoder 1900Hz
- 90° filter stereo / mono
- Flip-Flop
- Experimental board

To meet the requirements of a system concept, a designer will be able to build up individual circuits similar to working with a constructions set: He either selects from the available circuits on EURO-cards or makes up his own EURO-card by simply arranging the most suitable combination of Modular Sub-Cards on the master card.

MSC - Mother Board 1.915.770

The Modular Sub-Cards require a Mother Board of the standard EURO-card size for integration into the STUDER audio components system. The Mother Board carries 32 printed tracks from its edge-connctor to four small plug-in sockets. Each socket has 13 contacts of which six are common supply lines, while another six are individual to each socket. Then there is a separate busline for circuits 1+2 and another for 3+4.



Dimensions: EURO-card size 100 x 160mm

Connectors: 1x EURO connector 32 pin DIN 41'612

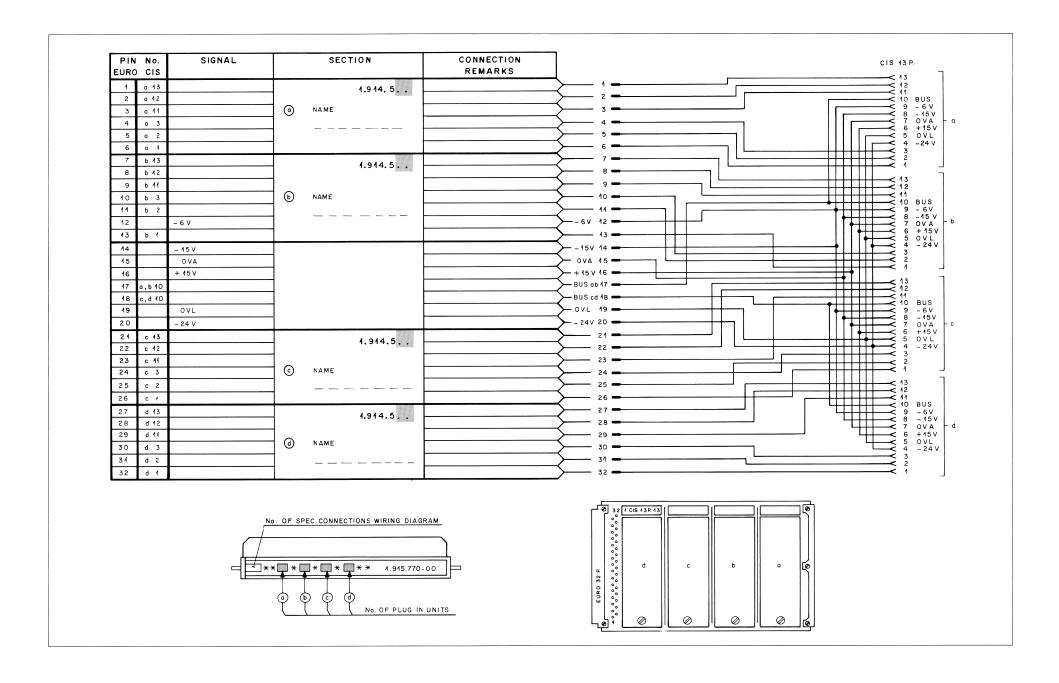
4x CIS connector 13 pin plug-in socket for MSC

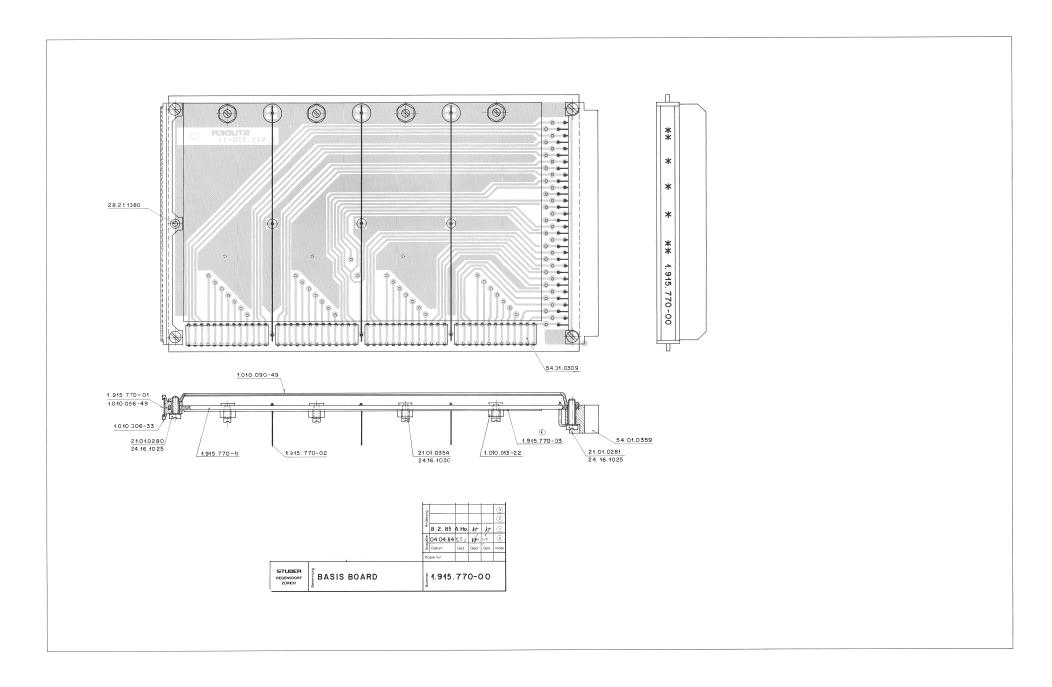
Ordering Information

EURO-card:

MSC Mother Board

1.915.770.00





KAPITEL 8: Europakarten und Stromversorgung 1.915 / 1.916. ...

INHALT

1.	Bestückungsansicht des Europakartenträgers	
2.	Transformer Block	1.910.5XX
3.	Stabilisator 5 24V	1.915.106 108
4.	Monitor Verstärker	1.915.304
5.	Monitor Relais	1.915.601
6.	Monitor Relais	1.915.602
7.	Signalisations-Relais	1.915.603
8.	Relais 8/1	1.915.605
	MSC Mother Board: siehe Kapitel 7	1.915.770
9.	Stereo-Symmetrierverstärker	1.915.904

Weitere kundenspezifisch ausgewählte Europakarten.

SECTION 8: EU standard PCB and Power Supply 1.915 / 1.916. ...

CONTENTS

1.	Layout of the Eurocard frame	
2.	Transformer block	1.910.5XX
3.	Stabilizer 5 24V	1.915.106 108
4.	Monitor amplifier	1.915.304
5.	Monitor relay	1.915.601
6.	Monitor relay	1.915.602
7.	Signalization relay	1.915.603
8.	Relay 8/1	1.915.605
	MSC mother board: see section 7	1.915.770
9.	Dual balancing amplifier	1.915.904

Further EU standard PCB's according to the specific customer requirements.

Trafoblock mit Gleichrichter 1.910.50X

Trafoblock mit Gleichrichter. Es bestehen zwei Grundausführungen:

- mit Netzschalter
- mit Netzrelais

1. Beschreibung

- Die Ausgangsspannungen sind programmierbar.
- Die Gleichrichter sind stark überdimensioniert.
- Die Sekundärseite ist mit 4 kV Prüfspannung von der Primärseite isoliert.
- Der Trafoblock ist allseitig geschlossen und liegt isoliert im Mischpult.
- Alle Primär- und Sekundärspannungen sind einzeln abgesichert.

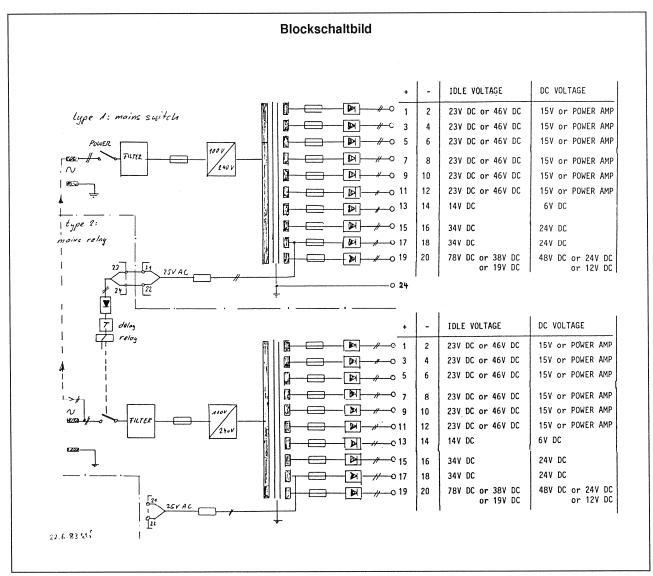


Fig. 1

2. Sicherheit

Der Trafoblock ist aufgebaut wie ein schutzisoliertes Gerät nach IEC 65, Klasse II. Als zusätzliche Sicherheit wird der Erdleiter eingeführt. Der Trafoblock 1.910.50X ist im Mischpult isoliert eingebaut, so dass die Verbindung zwischen Schutzleiter und Mischpultgehäuse gefahrlos aufgetrennt werden kann.

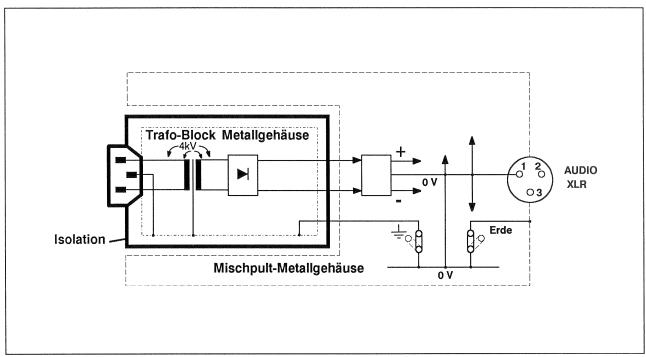


Fig. 2

3. Spezielle Daten

Siehe unter spezielle 1.910.500 Datenblätter 1.190.505

4. Mechanische Daten

Sekundär Buchse: 24P Molex

Gewicht: 9400 g

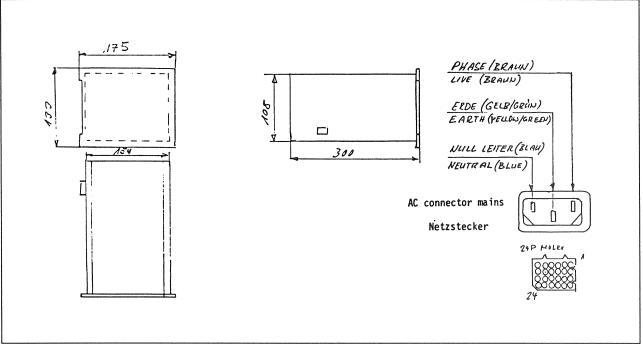


Fig. 3

Trafo Block 1.910.5XX

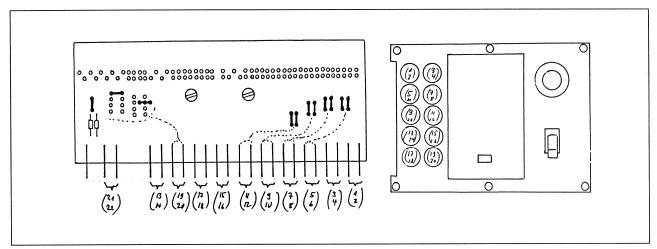


Fig. 4

TRAFO BLOCK			TRAFO BLOCK			
Grenzwerte:	Einzel Stabikarte max. Strom Sicherung		Limiting values	values SINGLE STABI PC max. current FUSE		
6V Wicklung (13) (14)	4A	T 5A	6V winding (13) (14)	4A	T 5A	
12V Wicklung	2,4A	T 5A	12V winding	2,4A	T 5A	
24V Wicklung (19)	1,2A	T 5A	24V winding (19) (20)	1,2A	T 5A	
48V Wicklung	0,6A	T 2A	48V winding	0,6A	T 2A	
15V Wicklung	2,1A	T 5A	15V winding	2,1A	T 5A	
24V Wicklung	1,2A	T 5A	24V winding	1,2A	T 5A	
40V Wicklung	1,2A	T 2A	40V winding	1,2A	T 2A	
Grenzwerte:	max.Strom	tabikarte Sicherung	Limiting values	DUAL STAB	I PC FUSE	parallel connection
6V Wicklung (13)	8 A	2 x T 5A	6V winding (13) (14)	8A	2 x T 5A	
12V Wicklung	5A	2 x T 4A	12V winding	5A	2 x T 4A	
24V Wicklung (19) (20)			24V winding (19) (20)			
48V Wicklung			48V winding			1 2 / 5 7 / 9 11
15V Wicklung	4-5 A	2 x T 4A	15V winding	4-5A	2 x T 4A	$\binom{1}{2}\binom{3}{4}\binom{5}{6}\binom{7}{8}\binom{7}{10}\binom{9}{12}$
24V Wicklung	2,5 A		24V winding	2,5A		
40V Wicklung	-	<u>-</u>	40V winding	-	-	

Fig. 5

Die maximale Belastung darf auf der gleichgerichteten Seite 350W nicht überschreiten.

Trafo - Block 1.910.500.81

1.910.500.81 1 x 6 V DC 2 x 15 V DC

4 × 40 V DC

2 x 24 V DC

1 x 48 V DC PHANTOM

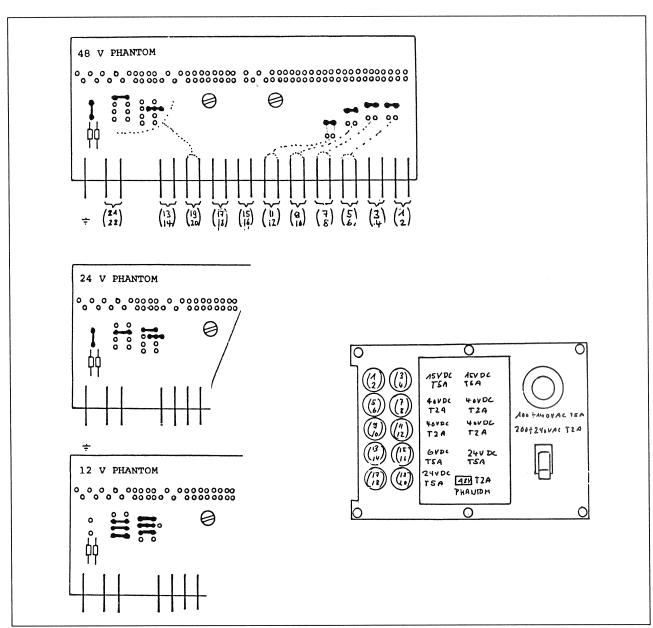


Fig. 6

Umbau auf andere Phantomspannungen

- Trafo-Block umbauen
- Widerstände auf dem Anschlussprint der Eingangseinheit ändern 48V 6,8 kOhm/0,4 % 1.169.200.21
 24V 4,3 kOhm/0,4 % Entwurf IEC 268-15A
 12V 580 Ohm/0,4 % 1.169.200.20
- Stabilisatorkarte 1.915.107 Litze umstecken

Trafo-Block 1.910.505.81

1.910.505.81 1 x 6 V DC 4 x 15 V DC 2 x 24 V DC

2 x 40 V DC

1 x 48 V DC PHANTOM

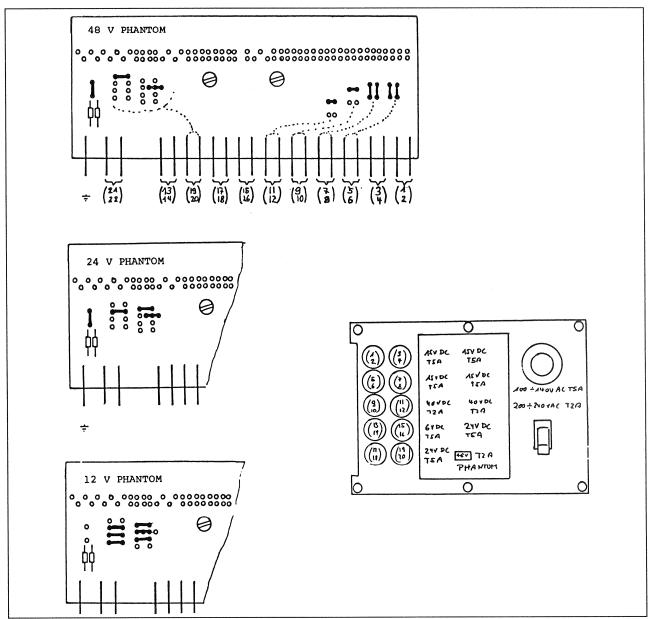


Fig. 6

Umbau auf andere Phantomspannungen

- Trafo-Block umbauen
- Widerstände auf dem Anschlussprint der Eingangseinheit ändern 48V 6,8 kOhm/0,4 % 1.169.200.21
 24V 4,3 kOhm/0,4 % Entwurf IEC 268-15A
 12V 580 Ohm/0,4 % 1.169.200.20
- Stabilisatorkarte 1.915.107 Litze umstecken

Mains Trafo Block 1.910.50X

Trafo with rectifier. Two basic types are available:

- with mains switch
- with mains relay

1. Features

- Output voltages are programmable.
- Rectifiers are heavely oversized.
- Secondary wirings are isolated by 4 kV against the primary side.
- The trafo-block is separately boxed and fixture by means of isulators.
- All voltages are protected by fuses individually.

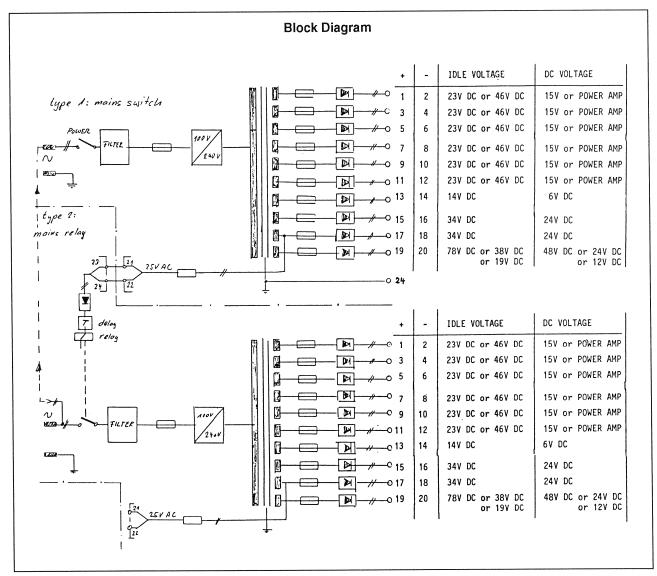


Fig. 1

2. Safety

The trafo-block is built like a double-isolated electric device (IEC 65 clause II). For improved safety, the connection to earth is also wired. In the mixer, the trafo-block 1.910.50X is built-in isolated. On the back side of the mixer the connection between earth and ground can be opened without the danger of an electric shock.

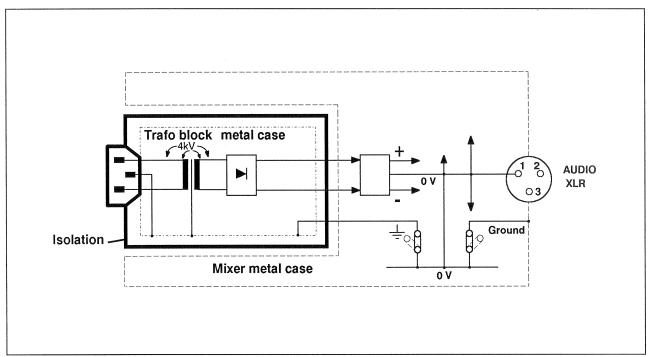


Fig. 2

3. Specifications

See special data sheet 1.910.500

1.190.505

4. Dimensions

Secondary connector: 24P Molex

Weight: 9400 g

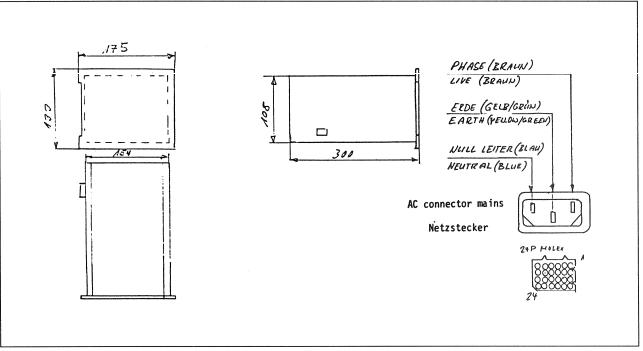


Fig. 3

Trafo Block 1.910.5XX

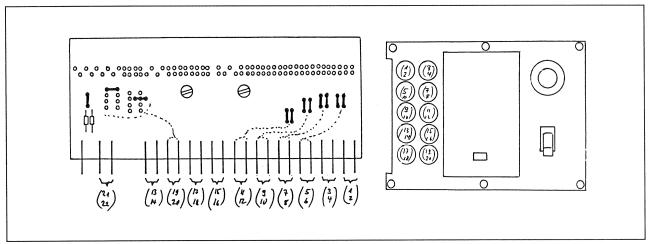


Fig. 4

TRAFO BLOCK			TRAFO BLOCK			
Grenzwerte:	Einzel S max. Strom	tabikarte Sicherung	Limiting values	SINGLE ST max. current	ABI PC	
6V Wicklung (13)	4A	T 5A	6V winding (13) (14)	4A	T 5A	
12V Wicklung	2,4A	T 5A	12V winding	2,4A	T 5A	
24V Wicklung (19)	1,2A	T 5A	24V winding (19) (20)	1,2A	T 5A	
48V Wicklung	0,6A	T 2A	48V winding	0,6A	T 2A	
15V Wicklung	2,1A	T 5A	15V winding	2,1A	T 5A	
24V Wicklung	1,2A	T 5A	24V winding	1,2A	T 5A	
40V Wicklung	1,2A	T 2A	40V winding	1,2A	T 2A	
Grenzwerte:	Doppel Stabikarte max.Strom Sicherung		Limiting values	DUAL STABI PC max. current FUSE		parallel schalten parallel connection
6V Wicklung (13)	8A	2 x T 5A	6V winding (13) (14)	8A	2 x T 5A	
12V Wicklung	5A	2 x T 4A	12V winding	5A	2 x T 4A	
(19) ا			24V winding (19) (20)			
(20)			48V winding			
48V Wicklung		2 7 44	15V winding	4-5A	2 x T 4A	$\binom{1}{2}\binom{3}{4}\binom{5}{6}\binom{7}{6}\binom{7}{8}\binom{9}{10}\binom{11}{12}$
15V Wicklung	4-5 A 2,5 A	2 x T 4A	24V winding	2,5A		2 4 / 0 8 / 10 12
24V Wicklung 40V Wicklung	2,5 A	1 _	40V winding	-	-	
40V Wicklung			1	'	•	•

Fig. 5

Trafo - Block 1.910.500.81

1.910.500.81 1 x 6 V DC 2 x 15 V DC 2 x 24 V DC

4 x 40 V DC

1 x 48 V DC PHANTOM

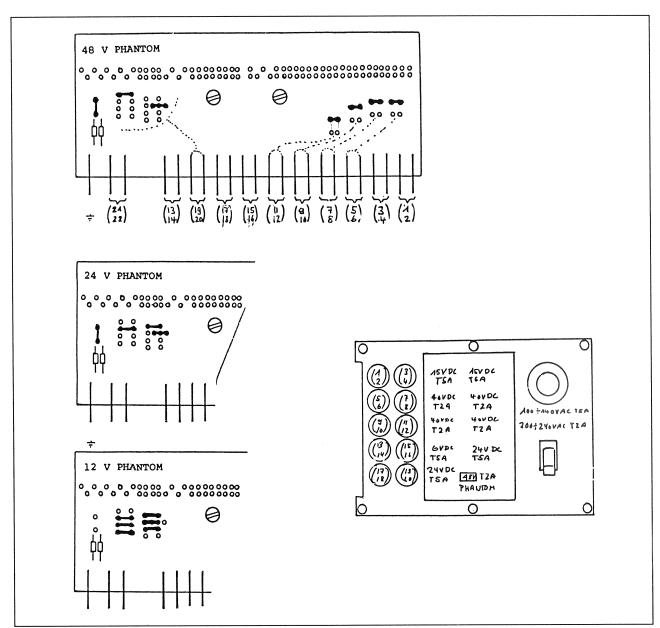


Fig. 6

Conversion of phantom powering

- Convert trafo-block
- Change resistor on the connection PCB of the input unit 48V 6,8 kOhm/0,4 % 1.169.200.21
 24V 4,3 kOhm/0,4 % Draft IEC 268-15A
 12V 580 Ohm/0,4 % 1.169.200.20
- Reconnect the stranded wire on the stabilizer PCB 1.915.107

Trafo-Block 1.910.505.81

1.910.505.81 1 x 6 V DC 4 x 15 V DC 2 x 24 V DC

2 x 40 V DC

1 x 48 V DC PHANTOM

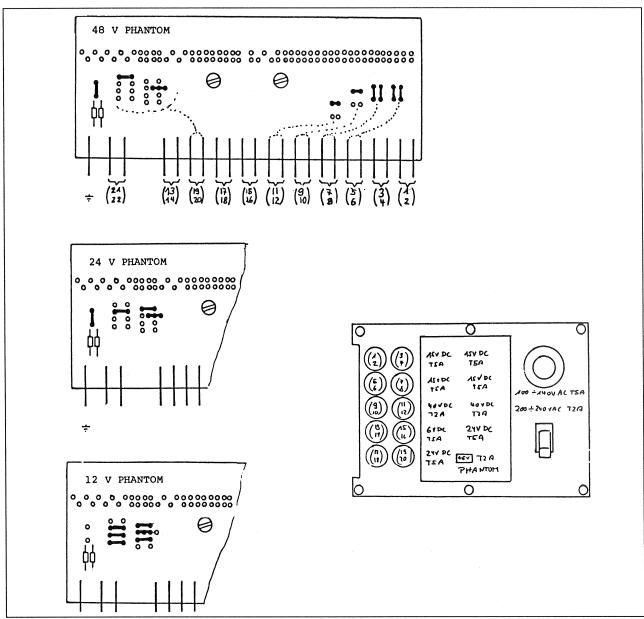
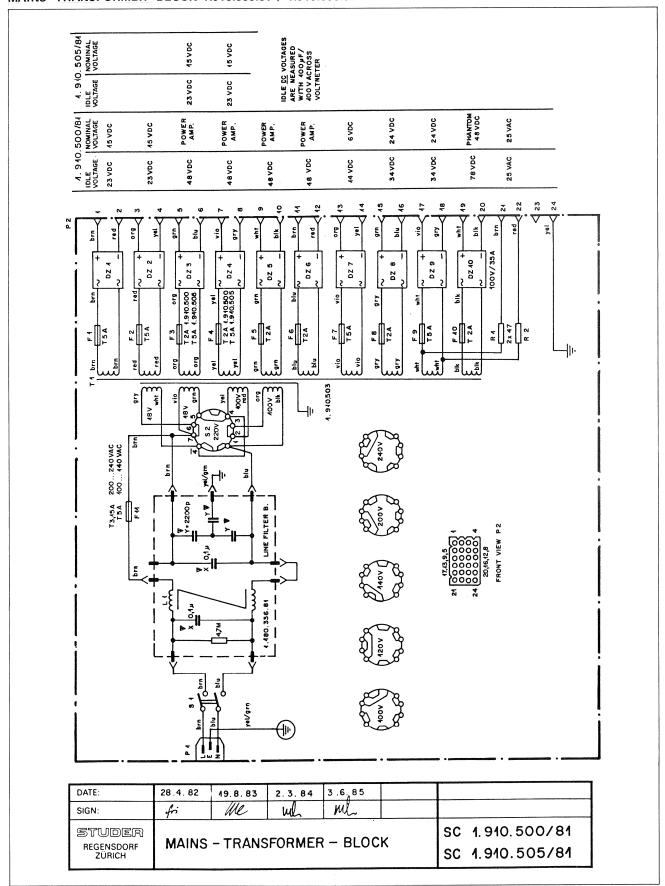


Fig. 7

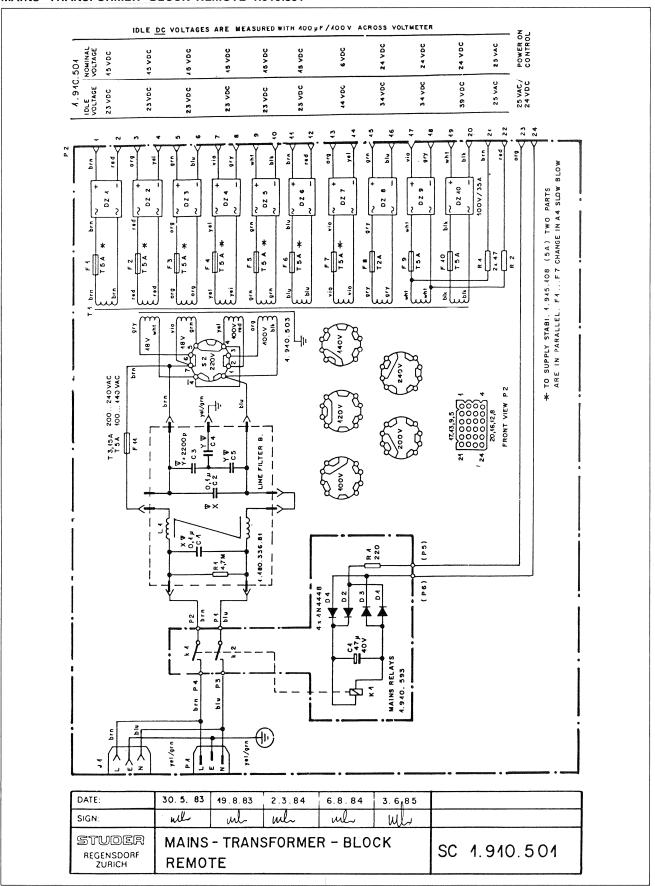
Conversion of phantom powering

- Convert trafo-block
- Change resistor on the connection PCB of the input unit 48V 6,8 kOhm/0,4 % 1.169.200.21
 24V 4,3 kOhm/0,4 % Draft IEC 268-15A
 12V 680 Ohm/0,4 % 1.169.200.20
- Reconnect the stranded wire on the stabilizer PCB 1.915.107

MAINS-TRANSFORMER-BLOCK 1.910.500.81 / 1.910.505.81



MAINS-TRANSFORMER-BLOCK REMOTE 1.910.501



Stabilisator 5 ... 24 V 1.915.106 /1.915.108

Spannungsstabilisator dessen Ausgangsspannung und Kurzschlusstrom mit Widerständen extern einstellbar ist. Mit Ausnahme der Phantom Stromversorgung werden alle in den Mischpulten der Serie 900 benötigten Betriebsspannungen mit den beiden Kartentypen 1.915.106 und 1.915.108 stabilisiert.

Leuchtdiode zur Anzeige des Betriebszustandes.

Drei von vorne zugängliche Messpunkte zur Kontrolle der Referenz- und Ausgangsspannung.

1. Schutzeinrichtungen

- "Crow Bar" schaltet ab bei zu hoher Ausgangsspannung
- Temperaturüberwachung am Regeltransistor
- Verpolungsschutz am Ausgang
- Langsames Hochfahren der Spannung beim Einschalten

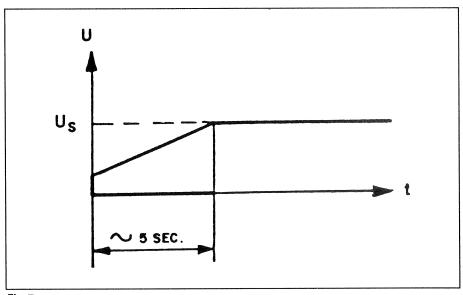


Fig. 7

Beim Betrieb als Doppelstabilisator für die Stromversorgung von Verstärkern mit positiver und negativer Speisespannung werden zwei Stabilisatorkarten gekoppelt.

Die Ausgangsspannung des einen Stabilisators steuert die Ausgangsspannung des anderen (Tracking). Damlt werden die Koppelkondensatoren der angeschlossenen Audioverstärker nicht unnötig belastet.

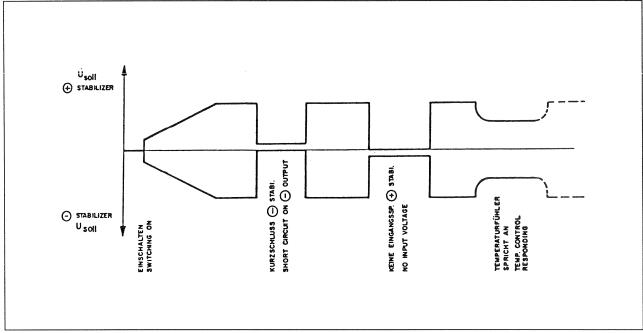


Fig. 8

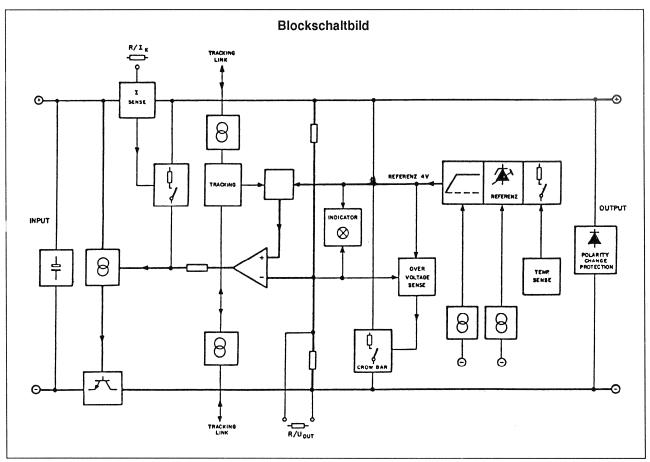


Fig. 9

2. Technische Daten

1.915.106

1.915.108

Ausgangsspannung extern programmierbar	U = 524V	U = 524V		
Minimale Eingangs- spannung (ohne Rippel)	U _{min} =U+1,5V	U _{min} =U+1,5V		
Maximale Eingangs- spannung	U _{max} =36V	U _{max} =36V		
Kurzschlusstrom extern programmierbar	I _k ≈ 0,54,5A	I _k ≈ 0,58,0A		
Max. Verlustleistung am Kühlblech	P ≈ 18 W	P ≈ 30 W		

Kurzschlussverhalten

Bei Ueberlast regelt derTemperatursensor die Ausgangsspannung zurück.

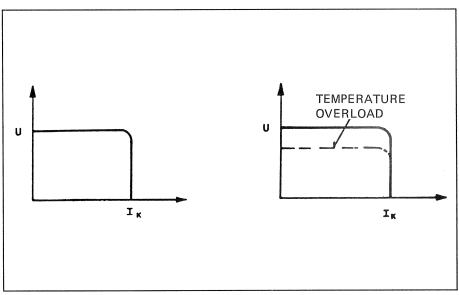


Fig. 10

Ueberspannungsschutz spricht an bei ca. 15% Ueberspannung am Ausgang

Max. Ausgangsstrom	@U _{15V} : 5A @U _{6V} : 8A	@U _{15V} : 5A @U _{6V} : 8A			
Ueberlagerte Brumm- spannung	U _{Br} ≤ 100μV	U _{Br} ≤ 100μV			
Leerlaufstrom	I _O (@U _{in} 30V) = 30mA	I _O (@U _{in} 30V) = 30mA			

3. Mechanische Daten

1.915.106

Abmessungen	Europakarte 100mm x 160mm	Europakarte 100mm x 160mm		
Breite	33mm, 7 E	66mm, 14 E		
Steckersystem	DIN 41 612 TYP B	DIN 41 612 TYP B		
Gewicht	ca. 360 gr	ca. 560 gr		

Stabilisator 5 ... 24 V 1.915.106 / 1.915.108

The output voltage and the short-circuit current of this voltage stabilizer are externally adjustable with resistors. Except for the phantom supply, all operating voltages of the Series 900 mixers are stabilized with the two types of circuit board numbered as 1.915.106 and 1.915.108.

Pilot LED for indicating the operating status.

Three test points for checking the reference voltage and the output voltage are accessible from the front.

1. Protective features

- "Crow Bar" disconnects if overvoltages are detected
- Temperature monitoring at regulating transistor
- Polarity confusion protection at output
- Slow voltage run-up when unit is switched on

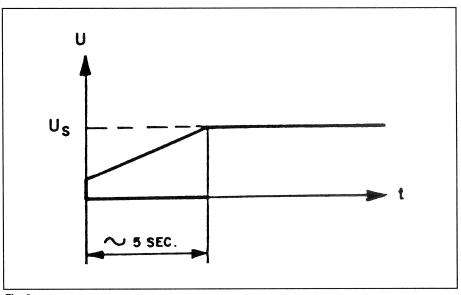


Fig. 8

Dual stabilizer operation for supplying amplifiers with negative and positive supply voltages is possible by coupling two stabilizer boards.

The output voltage of the first stabilizer controls the output voltage of the other (tracking). In this manner the coupling capacitors of the audio amplifiers are not unnecessarily loaded.

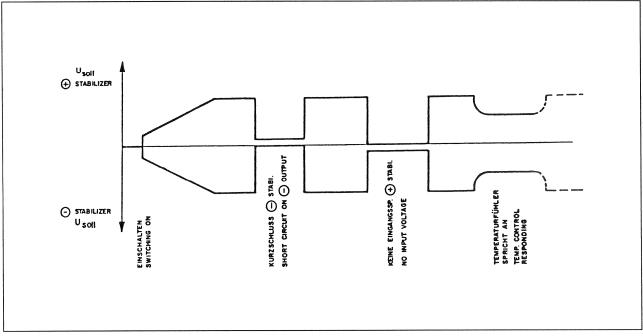


Fig. 9

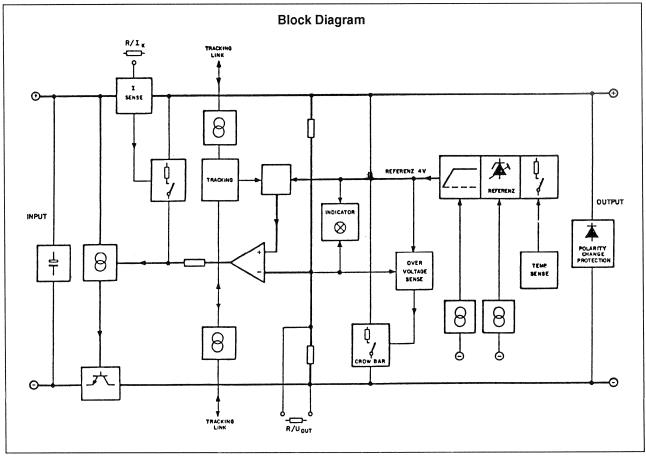


Fig. 10

2. Specifications

1.915.106

1.915.108

Output voltage externally programmable	U = 524V	U = 524V		
Minimum input voltage without ripple	U _{min} = U+1,5V	U _{min} = U+1,5V		
Maximum input voltage	U _{max} = 36V	U _{max} = 36V		
Short-circuit current externally progr.	I _k ≈0,54,5A	I _k ≈0,58,0A		
Max. power dissipation at heat sink	P ≈ 18W	P ≈ 30W		

Short circuit response:

In the event of an overload the output voltage is regulated down by the temperature sensor.

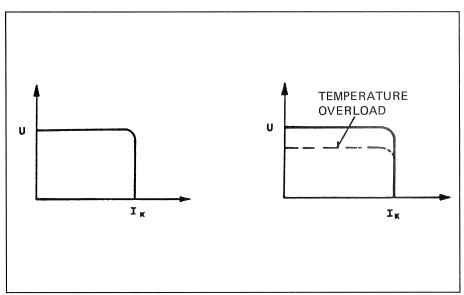


Fig. 11

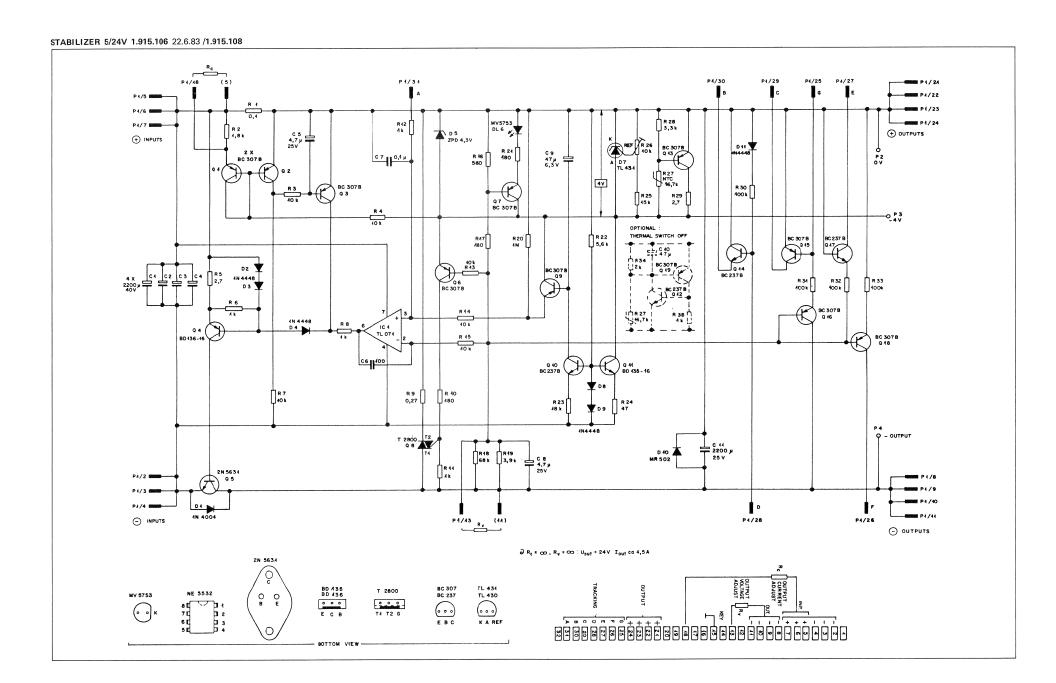
Over-voltage sense responds at approx. 15% excess output voltage

Maximum output current	@U _{15V} : 5A @U _{6V} : 8A	@U _{15V} : 5A @U _{6V} : 8A
Superimposed ripple voltage	U _{Br} 100 V	U _{Br} 100 V
Idle current	lo(@U _{in} 30V)=30mA	lo(@U _{in} 30V) = 30mA

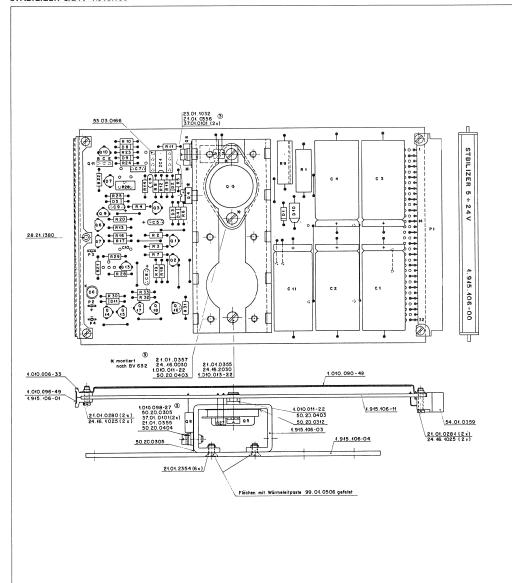
3. Mechanical Data

1.915.106

Dimensions	"Europe" PCB 100mm x 160 mm	"Europe" PCB 100mm x 160 mm
Width	33mm, 7 U	66mm, 14 U
Connector system	DIN 41 612 type B	DIN 41 612 type B
Weight	360 gr	560 gr



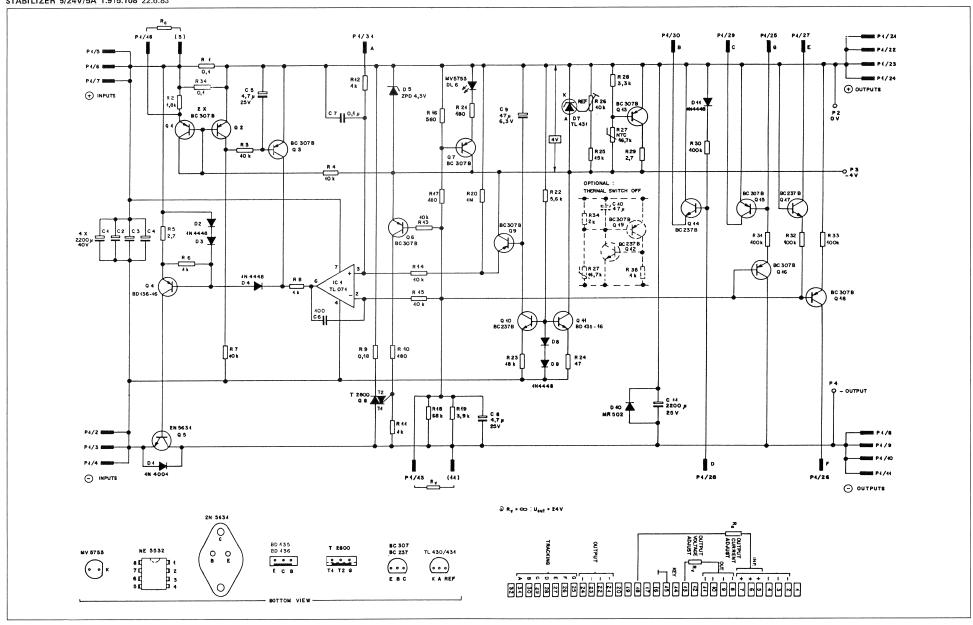
STABILIZER 5/24V 1.915.106



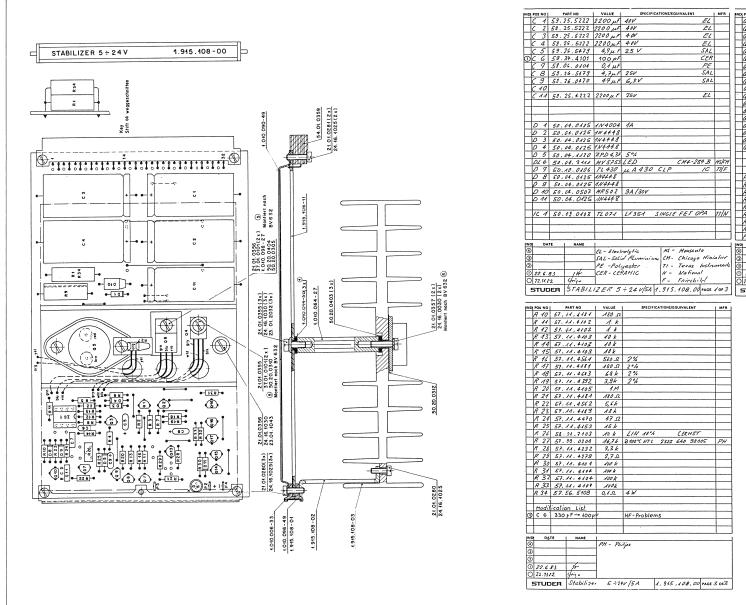
IND POS NO	PART NO	VALUE	SPECIFICATIONS/EC	UIVALENT	MFR	END! P	os no I	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	59.25.5222		40V	. EL		1	2 1	50.03.0515	BC307B	PNP General purpose 0,48/16 2401	1 0-4
C 2	59.25.5222	2200 pt	400	EL		1	2	50 . 03 . 0515	BC 307B	PNP	
C 3	59.25.6222	2200 MF	4 OV	EL		1	3	50.03.1515	BC 307B	PNP -	
C 4	59.26.5222			EL		1	7 4	50.03.0510	BD 136-16	PNP min 1A 140Y	4.85.5
C 5	59.26.5479	4,7 u F	25 V	SAL		\Box	2 5	50.03.0342	2N5631	NPN min 10 A/min 60V 200 W.	M
OC 6	59.34.4101	100 pf		CER		1	2 6	50.03.0515	BC 307B	PNP	
67	53.06.0104	0,1 µF		PE		1	7 7	50.03.0515	R 307 B	PNP -	
(8	53.26.5479	4,7 p.F	25V	SAL		10		50.33,0106			R/GE
(9	53.26.0470			SAL	-		2 9	50.13.0515	BC3078	PNP	
C 10							2 10	50.03.0436	BC 237 B	NPN General purpose 9,1A/Uceo 3 40	y one
C11	59. 25. 4222	2200 p. F	25V	EL		\Box	2 11	50.03.0495	BD135-K	NPN P min 2W	4,8,5,7
						\Box					
							1 13	50.03.0515	BC 307B	PNP	
							2 14	50.03.0436	BC 237 B	NPN -	
D 1	50.04.0105	1N4004	14			1	2 15	50.03.0515	BC 307B	PNP -	
02	50.04.0125	1N 4448					1 16	50.03.0515	BC 307 B	PNP -	
0 3	50.04.0125	1N4448						50.03.0436			
04	50.04.0125	1N4448				H		50. 03. 0515			
05	50.04.1120	ZPD 4,3V	5%			H					
	50.04.2111			CH4-284 B	MSKM	H			1		
07	50.10.0106	TL 430	4 A 430 CLP	IC	TI/F						-
08	50.04.0125				-/-	H	9 1	57.56.5108	. 0,12	4W	
	50.04.0125							57 . 44 .4182	1,8 k	2%	
010	50.04.0507	MR502	3A /30V				9 3		10 k		
011	50.04.0125	1N4448				\Box	8 4	57. 11.4103	10 K		
								57. 11.4279	2,7.0		
16 1	50.09.0103	TL 071	LF351 SINGLE	FET OPA	TIIN		9 6	57. 11.4102	1 1		
					.,	H	R 7	57. 11.4103	10 k		
						H	R 8	57. 11.4102	14		
						П	R. 9	57.56.5278	0,27 1	4W	
IND DAT	E NAME	1				IND	DA	TE HAME	1		
(4)		EL - Electi	rolytic MS -	Mousanto		@			M - Hola	ola	
3		SAL - Soli	d Aluminium CM-	Chicago Hinis	lur	3			R - RCA		
		PE -POL	jester TI -	Texas Instru	mods	2		. 44	s - Siem	ens	
1 22.6.8		CER - CER	PAHIC N -	National			22.6.	83 14	T - Telef	inken	
0 22.7.8	1 Gris-	1	F-	Fairchild			22.7.1		GE-Gen	eral Electric	
STUD	ER STABILI	ZER 5	÷24V 1.915.	106.00 PAGE A	OF 3	5	TUE	DER Stobilize	1 5 ÷ 24	1.315.106.00 PA	GE 2 OF 3
						_					

ND	POS NO		ART NO	VALUE	SPECIFIC	ATIONS/EQUIVALENT	MFR
٦	R 10	67,	11.4181	180 s			
٦	R 11	57. 4	11.4102	1 k			
	R 12	57.	11.4102	1 k			
T	R 13		11.4103	10 k			
	R 14	67	11.4103	10 K			
	R 15	57.	11.4103	10 k			
\neg	R 16	57.	11,4561	560 Q	2%		
	R 17	57.	11.4181	180 52			
	R 18	57,	11.4683	68 k	2%		
	R 19	57.	11 . 4 392	3,9k	2%		
	R 20	57	11.4105	.1M			
	R 21	57	11.4181	180 52	· ·		
	R 22	67.	11,4562	5,6k			
	R 23	57.	11.4183	18 k			
	R 24	57.	11.4470	47 12			
	R 25	57.	11.4153	15 k			
	R 26	58.	01.7103	10 k	LIN 10%	CERHET	
	R 27	57.	99.0208	16,74	2 100°C NTC	2322 640 98005	PH
	R 28	57.	11.4332	3,3 k			
П	R 29	57.	11.4279	2,71			
П	R 30	57.	11. 410 4	100 K			
Г	R 31	57,	11. 410+	100 k			
			11.4104	100 K			
	R 33	57.	11.4104	100k			
	Mog		tion List				
3	c 6	330	PF - 100	PF	HF - Probl	ems	
L							
Ĺ				L	l		
IND	DA	TE	NAME				
0				PH - P4	ilips		
3				1			
@			,				
0	22.6.	83	, Vr	1			
10	22.7.	81	Hiso				





STABILIZER 5/24V/5A 1.915.108



	os no I		RT NO	VALUE	SECULIA	ATIONS/EQ	IIIVAI ENT) MF			POS NO		ART NO	VALUE		SPECIFICATION			I MFR
				2200 uF	40V			EZ	ΗF		a 1			BC307B	PNP				MFH
-12				2200 MF				EL	٦ŀ	-				BC 307B		C 1 /- /	7		-
-12				2200 µF				EL	٦ŀ					BC 307B				-	_
-12				2200 MF				EL	7 F					BD 136-16		min / 1 /	W	_	4.8.5.7
- 2			6.5479					SAL	٦ŀ					2N5631				14/	14,5,3,7
				100 pF				ER	7 F					BC 307B		MIN AUNIM	A 888 200	~	- M
			6.0104					PE	7 F					R 307 B					+-
				4,745	25V			SAL	71					T 2800			C 111 D		R/GE
			6.0470		6.3V			SAL	\dashv \vdash					BC307B		8 H .	(146 D		Klas
	10	30.2	B.0710	7/12/	0,51			3,72	-1 F					BC 237 B		6	2		ony
			1 / 22 2	2200 µ F	25V			EL	-1 F					BD135-K				* (103 40V	
- 4	. ""	50, 1	5. + 222	2200 1	237				\dashv \vdash		Q 11	30.	05,0495	00135%	NEN	P min	. W		4,8,5,7
+									\dashv \vdash					26 2000					-
+	-								\dashv \vdash					BC 307B				_	-
Н	0 1			1N4004	//				⊣⊦					BC 237 B					
1				1N 44 48	74				⊣⊦					BC 307B					-
H				184448					-11					BC 307 B					
1				114448			·		-1 F					BC 237B					+
H				ZPD 4,3V	C01				\dashv	-1	418	50.	03.0515	BC 307 B	PNP			-+	+-
				MV 5753			CH4-284	2 110	l F	-									-
					HA 430			IC 171		\dashv									
H			4.0125		JE H 430	C27		10 111	41	+	0.7		56.6		<u> </u>				-
H			4.0125						\dashv	-4	9 1	57	56.5108						
				MR502	24/2014				\dashv				14.4182	1,8 k	2%				
	0 10			1N4448	3A / 3UV				\dashv				11.1103	10 K					
H	0 11	30.1	14.0125	11/4448					-11				11.4103	10 k					
Н		- C A	11 11 1	=	16351		FET OF	24 111					11.4279	2,752					-
H	16 1	50.	73.0103	TL 07.1	27351	SINGLE	FET OF	~ ///	41				11.4102	1 K					
Н									-11				11.4103	10 k					_
\vdash									-1 ŀ		R 8		11.4102	1 k					
ш		L:			l				[_	R 9	57	56.5188	0,181	14W				
MD	DA	TE	NAME						⊢	MD	DAT	TE	NAME						
<u>0</u>				EL - Elect	rolytic		Mousanto		. 11	0				M - Molor	ila				
9					d Aluminiu					3				R - RCA					
@				PE -POL	yester .	7/ -	Teras h	ustrime		@				S - Sieme					
삗	22.6.	83	14	CEK-CE	RAMIC		National				22.6.		No	T - Telefu					
	22.14.6		Gris-	<u> </u>			Fairchile				22.11.8		frigi	GE-Gene		ectric			
5	TUE	DER	5TABIL	12 ER 5	÷ 24 V/5A	1.915.	108.00	AGE /OF	3	5	STUD	ER	Stabilize.	5 ÷ 24	V /5A	1.9	15.108.	00 PAGE	2 of 3

Phantom / 24 V Stabilisator 1.915.107

Stabilisatorkarte mit zwei getrennten, isoliert aufgebauten Spannungsstabilisatoren für die Phantom- und 24 V Stromversorgung. Zwei Leuchtdioden zeigen den Betriebszustand an. Zwei Messpunktpaare sind mit Messklemmen von vorne zugänglich.

1. Phantomversorgung

Die Ausgangsspannung von 12V, 24V oder 48V ist mit einer Brücke einstellbar (Beachten Sie, dass eine Aenderung der Phantomspannung auch eine Anpassung der Eingangsspannung und eine Aenderung der Phantomeinspeisewiderstände im Mikrokanal bedingt).

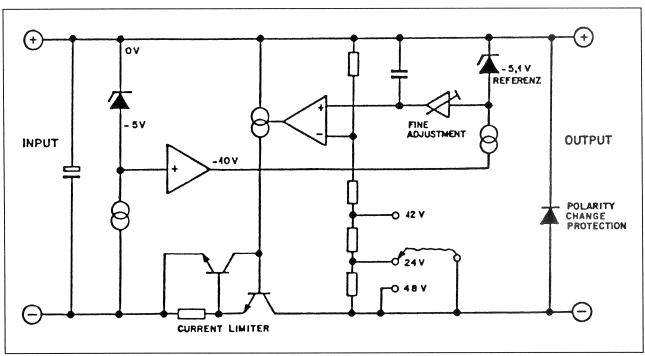


Fig. 11

2. Technische Daten

Ausgangsspannung

U=12V, 24V, 48V

einstellbar

Minimale Eingangs-

Umin=13V

spannung für 12V

Umax=100V

Max. Eingangsspannung

lk=350mA

Kurzschlusstrom Laststrom

Imax=300mA

Kurzschlussverhalten mit automatisch, spannungsabhängigem "Fold Back"

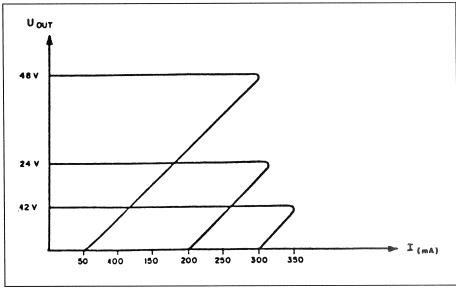


Fig. 12

Ueberlagerte Brummspannung U_{Br}≤100μV

Leerlaufstrom

 $I_{O@}80V U_{in}=25mA$

3. 24V Stabilisator

Die Ausgangsspannung ist fest eingestellt auf 24V DC.

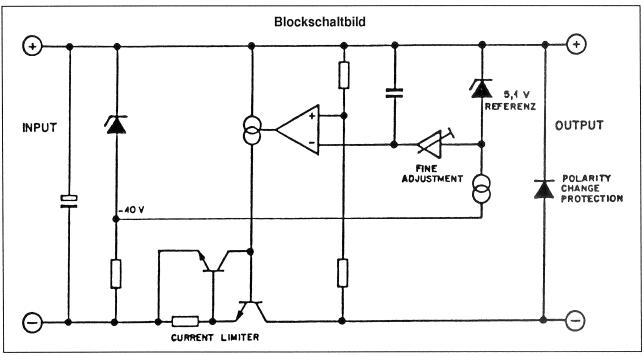


Fig. 13

4. Technische Daten

Ausgangsspannung U=24V

Minimale Eingangs- U min=25V spannung (ohne Rippel)

Maximale Eingangs- U max=36V spannung

 $\textbf{Kurzschlusstrom} \quad \textbf{I}_{k} \text{--}660 \text{mA}$

Laststrom Imax=600mA

Kurzschlussverhalten mit automatischem "Fold Back"

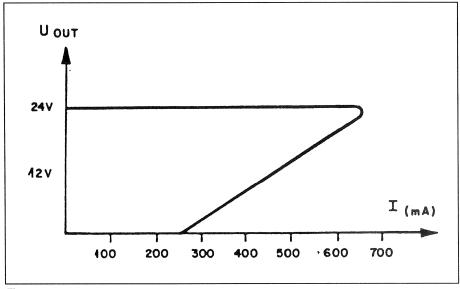


Fig. 14

Ueberlagerte Brummspannung U_{Br}≤100μV

Leerlaufstrom

 $I_{O@}Uin30V = 20mA$

5. Mechanische Daten

Abmessungen "EUROPE" PCB 100mm x 160mm

Steckersystem DIN 416 12 Typ B

Breite 33mm 7m

Gewicht ca. 320 gr

Phantom / 24 V Stabilizer 1.915.107

Stabilizer board with two separate and isolated voltage stabilizers for the phantom supply and the 24V supply. The two pilot LEDs indicate the operating status. Two pairs of test points are accessible from the front with rest clips.

1. Phantom Supply

The 12V, 24V or 48V output voltage can be adjusted with a bridge. (Please note that any change of the phantom voltage requires a corresponding adjustment of the input voltage and the replacement of the phantom supply resistors is the microphone channel).

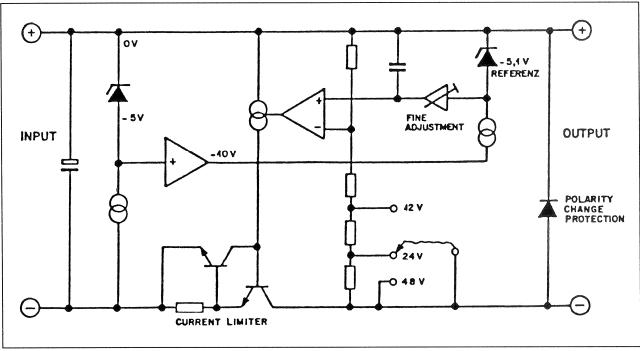


Fig. 12

2. Specifications

Output voltage, U = 12V, 24V, 48V

variable

Minimum input voltage Umin=13V

for 12V

Max. input voltage Umax = 100V

Short-circuit current lk=350mA

Load current Imax=300mA

Short-circuit response with automatic, voltage-dependent fold-back

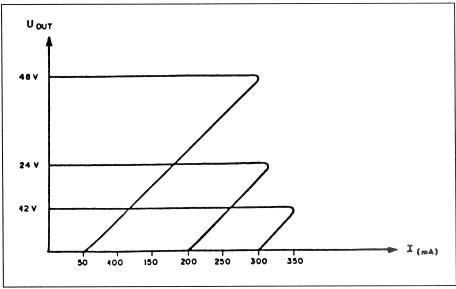


Fig. 13

Superimposed ripple

voltage

U_{Br}≤100μV

No-load current

 $I_{o@}80V U_{in}=25mA$

3. 24V Stabilizer

The output voltage is permanently set to 24 VDC.

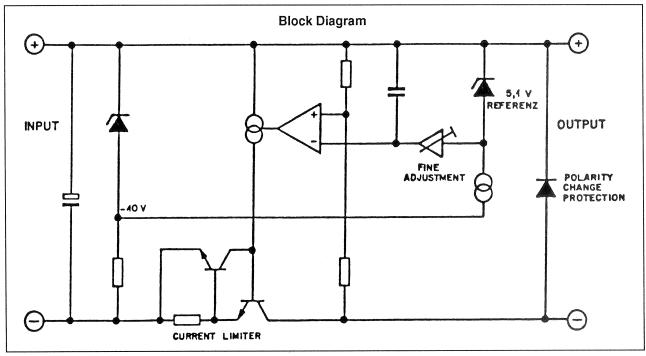


Fig. 14

4. Specifications

Output voltage U=24V

Minimum input voltage U min=25V

(without ripple)

Maximum input voltage U max=36V

Short-circuit current I_k~660mA

Load current Imax=600mA

Short-circuit response with automatic fold-back

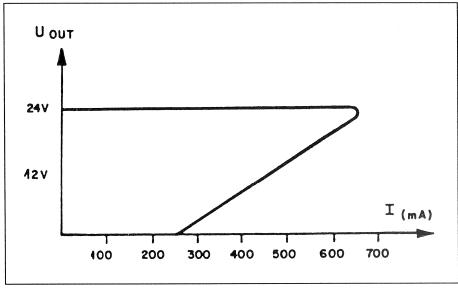


Fig. 15

Superimposed ripple voltage

U_{Br}≤100μV

No-load current

 $I_{0@}Uin30V = 20mA$

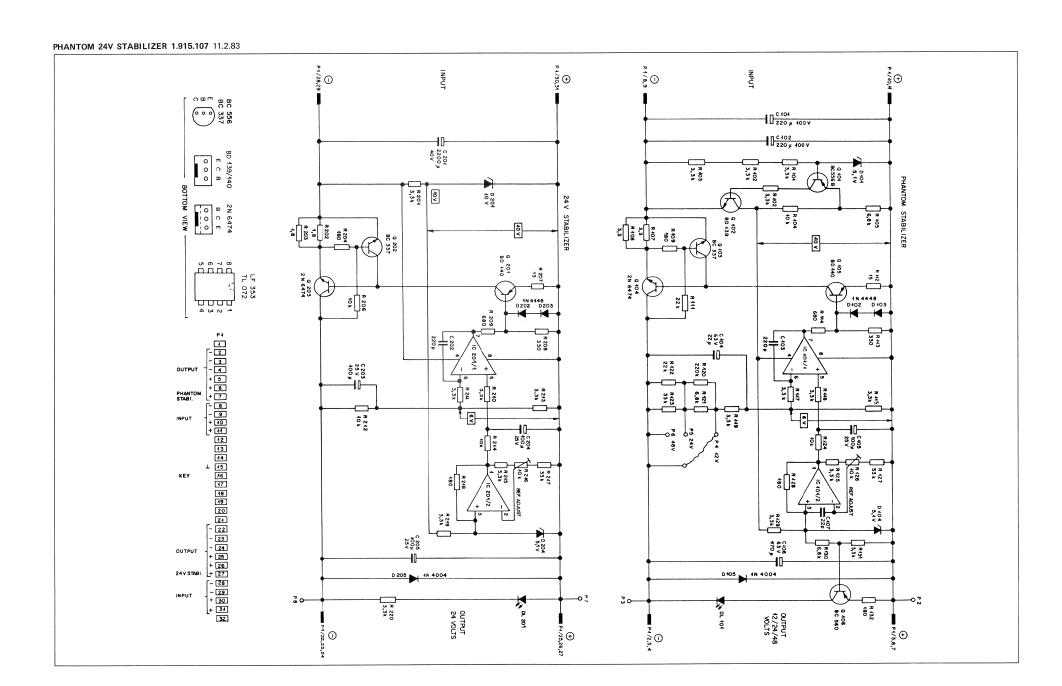
Mechanical Data 5.

"EUROPE" PCB 100mm x 160mm Dimensions

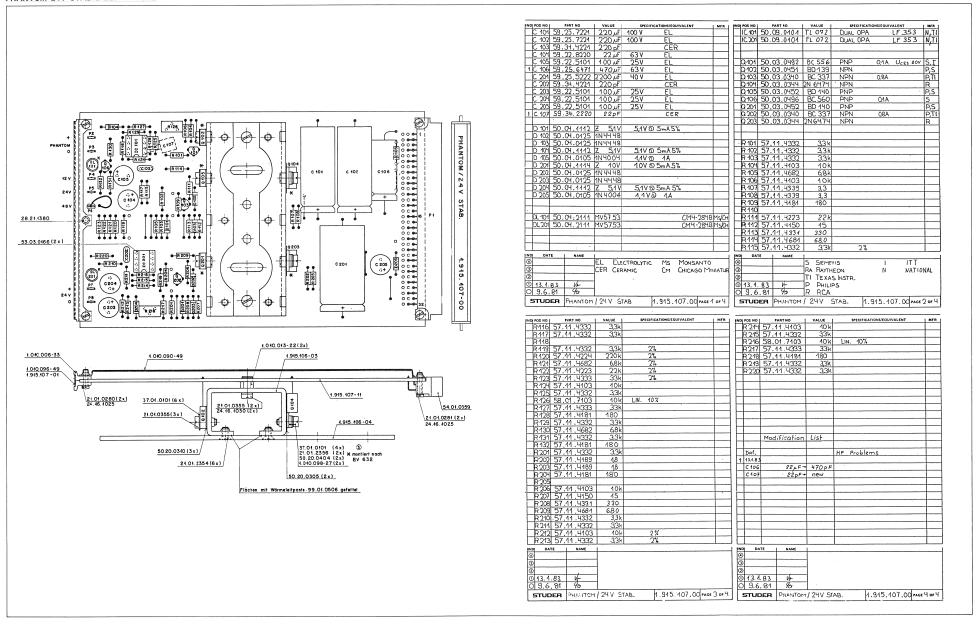
Connector system DIN 416 12 type B

> Width 33mm 7m

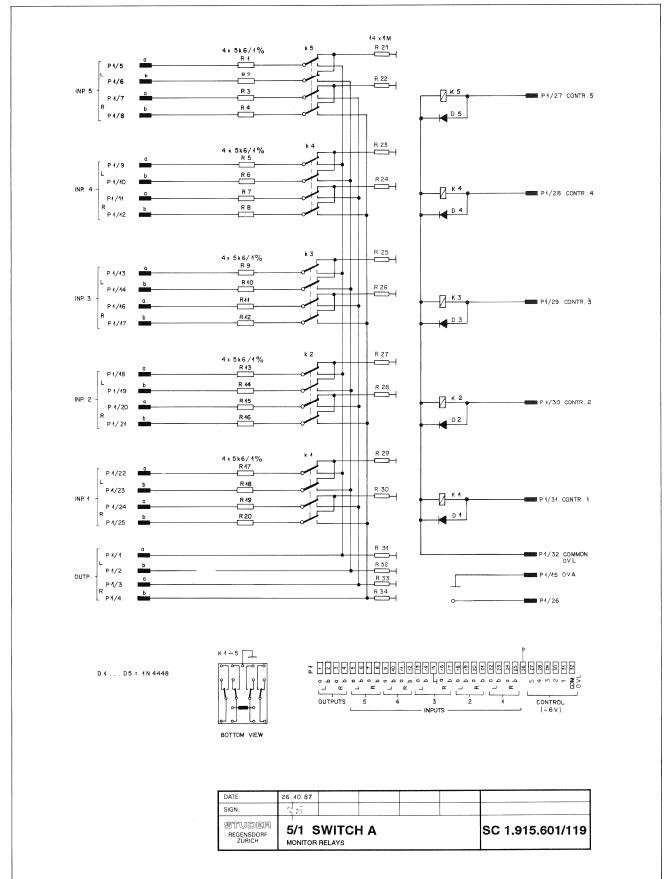
Weight ca. 320 gr

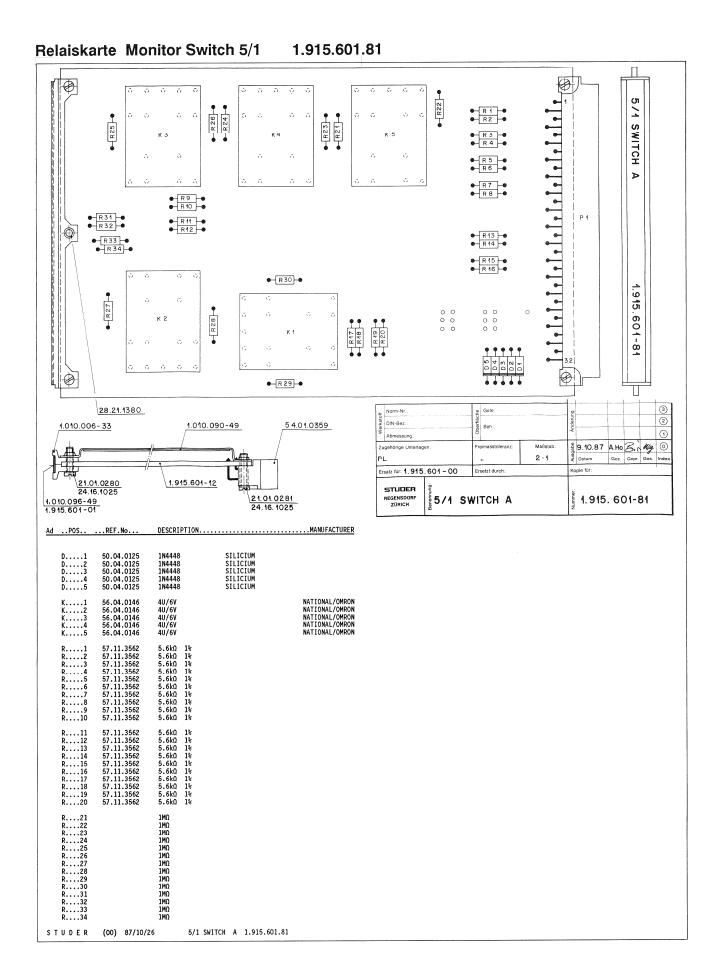


PHANTOM 24V STABILIZER 1.915.107

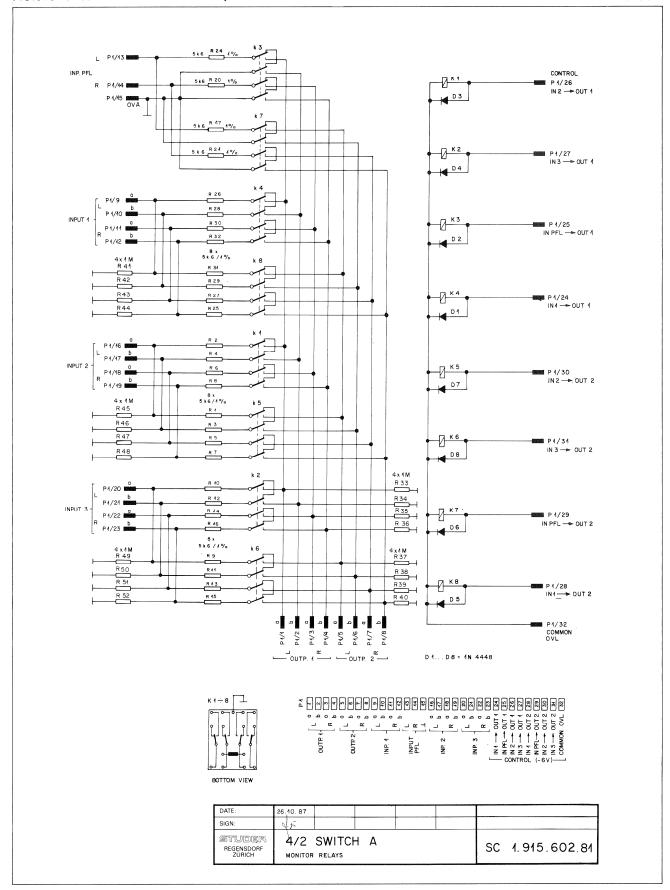


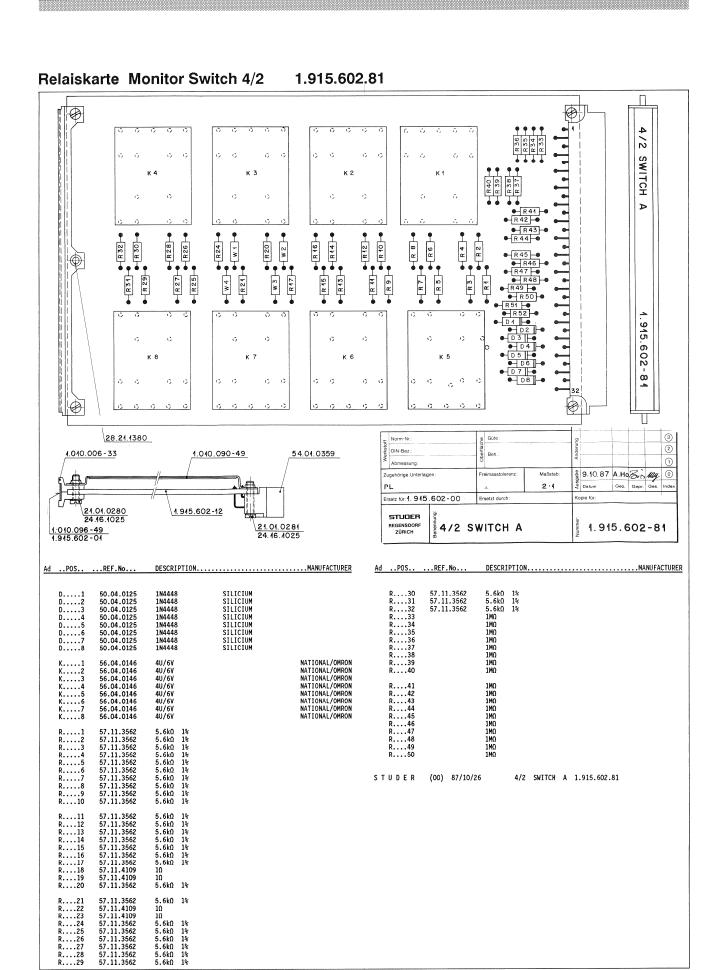
Relaiskarte Monitor Switch 5/1



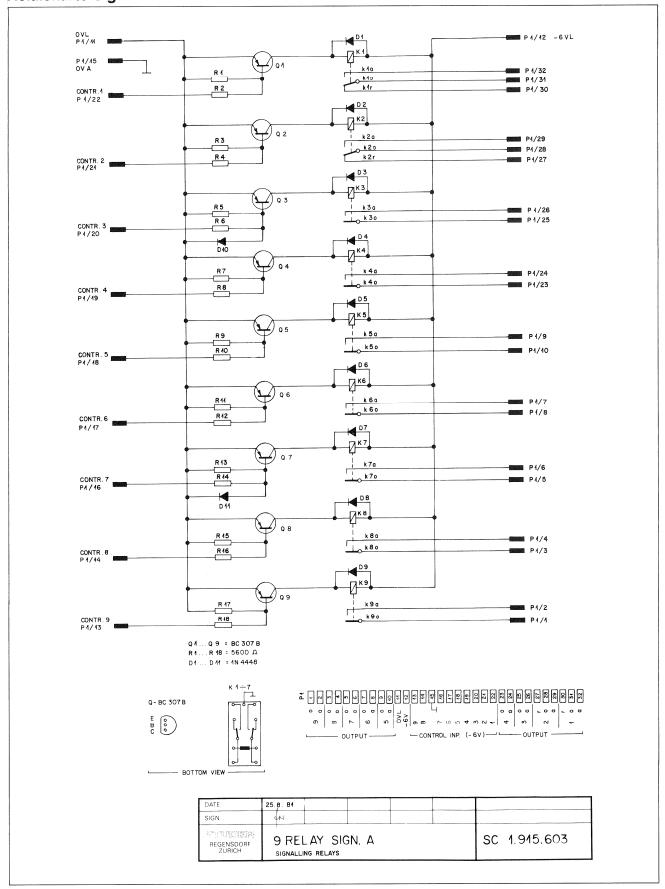


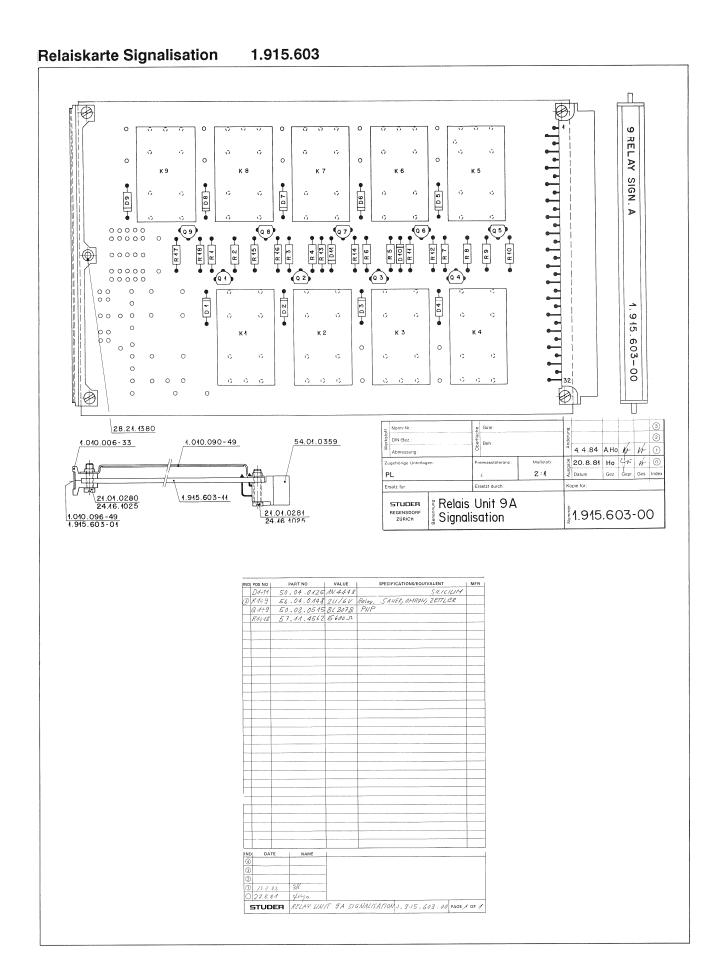
Relaiskarte Monitor Switch 4/2



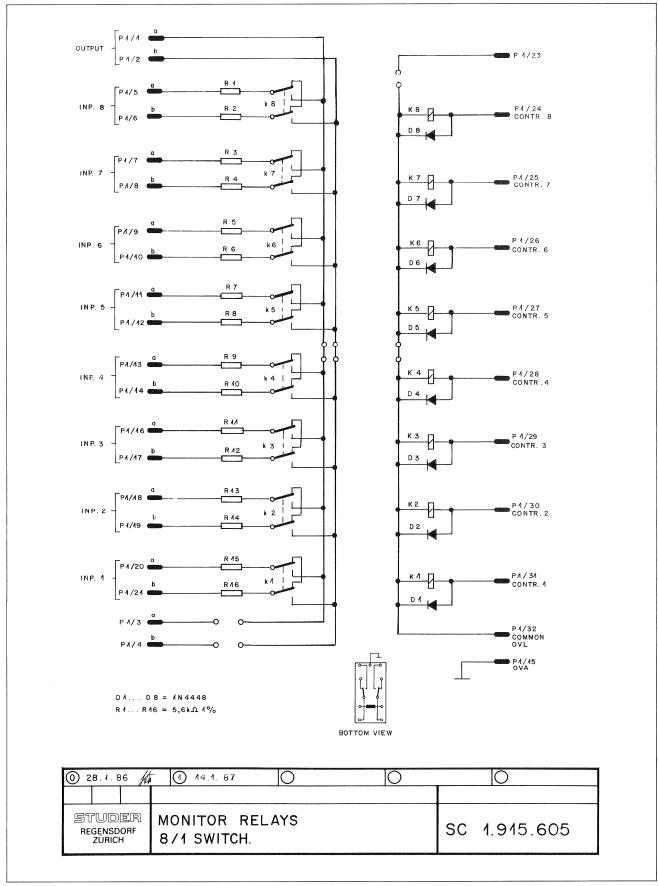


Relaiskarte Signalisation





Monitor Relays 8/1 1.915.605



Monitor Relays 8/1 1.915.605

